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

拉绳/拉线式位移传感器

ROPE/PULL TYPE DISPLACEMENT SENSOR

拉绳/拉线式位移传感器

ROPE/PULL TYPE DISPLACEMENT SENSOR

- 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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米朗拉绳/线位移传感器选型指引
Selection Guidelines For Miran Rope/Line Displacement Sensors

MPS - S - 500mm - R - C

其他特殊附加要求：

空白：默认常规标准，1米电源线；EX:防爆型（所有防爆型需要有此后缀）；C：磁吸式安装方式（所有款型都可以做磁吸式）；G：标准挂扣式连接头；G1/G2：可选挂扣式连接头；G L：加装隔离电源模块，4-20mA的加装该模块后，输出是4-20mA四线制；0-5V或者0-10V加装之后也是四线制电压输出，要实现四线制，由于空间限制，XXXS、XXS、XS、S型需要外加隔离电源模块，S型以上大小的可以内置。2m：2米电源线；3m：3米电源线，以此类推；注意：以上代码列举在一起的话，代表以上几者参数同时包含，如：“C2m”代表磁吸式安装方式并且带2米电源线，请按照上面的代码先后顺序列出。

其他以上没有列出的附加要求请用文字描述：如拉绳方向与安装面垂直（大部分型号的拉绳方向与安装面平行）、外加铝合金防护外壳、外加塑胶防护外壳等。

Other special additional requirements:

Blank:Default conventional standard, 1 meter power cord; EX:explosion-proof type (all explosion-proof types need this suffix);

C:magnetic installation mode (all models can be magnetic); G:Standard hook type connector; G1/G2:Optional hook connector;

GL:Equipped with isolated power module, 4-20mA After the module is installed, the output is 4-20mA four-wire system; 0-5V or0-10V after installation is also a four-wire voltage output, to achieve four-wire system, due to space limitations, XXXS, XXS, XS, S type need additional isolation power module, S type above the size can be built in. 2m:2m power cord; 3m:3m power cord, and so on; Note: If the above code is listed together, it means that the above parameters are included at the same time, such as: "C2m" represents the magnetic installation mode and has a 2 meter power cord, please list it in the order of the above code.Other additional requirements not listed above should be described in words: for example, the direction of the cable is perpendicular to the mounting surface (the direction of the cable is parallel to the mounting surface in most models), an aluminum alloy protective shell, and a plastic protective shell.

信号输出方式：

R:电位器输出/电阻输出(0-5K、0-10K可选)；V1:0-5V电压输出，三线制；V20-10V电压输出，三线制；A2:4-20mA电流输出，二线制；A3:4-20mA电流输出，三线制；FGA4:4-20mA电流输出，非隔离四线制；GLA4:4-20mA电流信号输出，隔离四线制；FGV5:0-5V电压输出，非隔离四线制；GLV5:0-5V电压信号输出，隔离四线制；FGV6:0-10V电压输出，非隔离四线制；GLV6:0-10V电压信号输出，隔离四线制；(隔离四线制仅限电位计原理拉绳尺可做。这种型号是传感器内部含隔离电源模块，该输出信号的抗干扰能力比较强，此隔离四线制模块可以内置在传感器内部(内置此模块要求安装底座在M型或者以上大小，M型以下安装底座则需要外置MOGLA4N或MOGLA4NR模块)，如需其他隔离四线制模块型号请参照我司隔离四线制模块选型表。RS:RS485数字信号输出(12位分辨率)；RSG:RS485数字信号输出(16位高分辨率)；S:SSI数字信号输出；P:脉冲信号输出；P1:脉冲差分信号输出；脉冲输出型可以装配各种类型编码器，输出各种类型的脉冲信号或者绝对值编码器原理的数字信号、模拟信号(常规装配是NPN推挽式，2000P/R的增量型编码器)。注：XXXS/XXS型默认电阻输出，其他信号输出时需外加信号转换模块。XS，S型如果需要四线制电压或者四线制电流输出型，需要外加电源隔离模块；SSI数字信号输出仅限于磁电编码器原理的拉绳位移传感器(MPSFS2、SMZFS2、WEPZFS2、MPSZFS2、MPSZLFS2、MFB-MPSFS2、MFB-MPSZFS2、MFB-MPSZLFS2系列)。

Signal output method:

R:Potentiometer output/resistance output (0-5K, 0-10K optional); V1:0-5V voltage output, three-wire system; V2:0-10V voltage output, three-wire system; A2:4-20mA current output, two-wire system; A3:4-20mA current output, three-wire system; FGA4:4-20mA current output, non-isolated four-wire system; GLA4:4-20mA current signal output, isolated four-wire system; FGV5:0-5V voltage output, non-isolated four-wire system; GLV5:0-5V voltage signal output, isolated four-wire system; FGV6:0-10V voltage output, non-isolated four-wire system;GLV6:0-10V voltage signal output, isolated four-wire system; {The isolation four-wire system can only be made by the potentiometer principle pull rope ruler.This model contains an isolated power module inside the sensor, the output signal has a strong anti-interference ability, and the isolated four-wire mold block can be built inside the sensor (the built-in module requires the installation base to be M type or above size, and the installation base below M type requires an external MOGLA4N or MOGLA4NR module). If you need other isolated four-wire mold block models, please refer to our isolated four-wire mold block selection table. RS:RS485 digital signal output (12-bit resolution);RSG:RS485 digital signal output (16-bit high resolution);S:SSI digital signal output;P:pulse signal output;P1:pulse differential signal output;pulse output type can be assembled with various types of encoders, output various types of pulse signals or absolute encoder principle of digital signals, analog signals (conventional assembly is NPN push-pull, 2000P/R incremental encoder). Note: XXXS/XXS type default resistance output, other signal output requires additional signal conversion module. XS, S type if you need four-wire voltage or four-wire current output type, you need additional power isolation module; SSI digital signal output is limited to rope displacement sensors based on magnetoelectric encoders (MPSFS2, SMZFS2, WEPZFS2, MPSZFS2, MPSZLFS2, MFB-MPSFS2, MFB-MPSZFS2, MFB-MPSZLFS2 series).

有效测量行程：100-35000mm之间任意量程可选，单位：mm毫米,一般建议选100的倍数量程，或者参照米朗常规量程参考表，货期会比较快，特殊情况下也可以选择如658mm、5211mm等任意量程也可以生产，这些不是常规量程的需要另外加工定做相应的线轮来生产，货期会稍慢点。

Effective measurement range:Optional range between 100-35000mm, unit: mm mm, it is generally recommended to choose a multiple of 100 measuring range, or refer to the Milan conventional measuring range reference table, the delivery time will be faster, in special cases, you can also choose any measuring range such as 658mm, 5211mm, etc., can also be produced, these are not conventional measuring ranges need to be processed and customized corresponding wire wheels to produce, the delivery time will be slightly slower.

安装基座型号大小（根据基座的大小选择相应范围的有效测量行程）

XXXS：100-350mm；XXS：100-1000mm；XS:100-1200mm；S:100-1300mm；S1:100-1300mm；M:1000-4000mm；L:4500-10000mm；XL:11000-35000mm；

{注：“S1”代表老款不带支架，底部螺丝安装的；SMZFS2、WEPZFS2、MPSZFS2、MPSZLFS2、MFB-MPSZFS2、MFB-MPSZLFS2忽略此安装基座型号选项；超出这些量程范围的，可以联系我们定制}。

Installation base model size(select effective measurement stroke within the corresponding range based on the size of the base)

XXXS:100-350mm; XXS:100-1000mm;XS:100-1200mm;S:100-1300mm; S1:100-1300mm;M:1000-4000mm;L:4500-10000mm;XL:11000-35000mm;

{Note: "S1" represents the old model without bracket, the bottom screw installation; SMZFS2, WEPZFS2, MPSZFS2, MPSZLFS2, MFB-MPSZFS2, MFB-MPSZLFS2 Ignore this mounting base model option; Beyond these ranges, you can contact us to customize}.

米朗拉绳传感器系列：

MPS、SM、WEP、MDS：普通标准型，普通防水，如：可以承受短时间溅水，短时间雨淋等。

MPSFS2、SMZFS2、WEPZFS2、MPSZFS2、MPSZLFS2:防水型（磁感应）拉绳位移传感器，绝对位置输出型，采用特有的防水专利技术，完全防水，可以在深水中使用 防护等级可达IP68。

MFB-MPSFS2、MFB-MPSZFS2、MFB-MPSZLFS2:防水隔爆型（磁感应）拉绳位移传感器，获得专业隔爆证书，采用米朗公司自主研发多圈磁感应绝对值编码器，内部使用高强度灌封胶封装，从而保证磁感应绝对值编码器能够在水下长期正常工作号输出方式信号输出方式为电流4-20mA三线制、电压0-5V三线制、电压0-10V三线制、RS485、脉冲、SSI。（有特殊要求可定制）

MBA-MPS：本安防爆型拉绳位移传感器，MBA-MPS安装尺寸跟MPS安装尺寸相同，内部核心部件为高精度、长寿命多圈电位计，并获得本安防爆证书，防爆标志为Ex ia IIB T6 Ga，限电流二线制和RS485两种信号输出。

注意：防水、防爆类型的产品，均以MPS系列底座为主，其他系列如需生产均为定制产品，请于生产部门沟通后在确定。

WS:出口线方向万向型，拉绳的出口线处可以斜着拉出来，不需要与出线口的平面垂直。

Miran rope displacement sensor series:

MPS,SM,WEP,MDS:ordinary standard type, ordinary waterproof, such as being able to withstand short-term splashing, short-term rain, etc;

MPSFS2,SMZFS2,WEPZFS2,MPSZFS2,MPSZLFS2:Waterproof (magnetic induction) rope displacement sensor, absolute position output type, using unique waterproof patented technology completely waterproof, can be used in deep water, protection level up to Ip68.

MFB-MPSFS2,MFB-MPSZFS2,MFB-MPSZLFS2:Waterproof and flameproof type (magnetic induction) rope displacement sensor obtained professional flameproof certificate, adopts the multi-circle magnetic induction absolute encoder independently developed by Miran company and uses high-strength pot-sealing sealant inside, so as to ensure that the magnetic induction absolute encoder can work normally under water for a long time. The signal output mode is current 4-20mA three-wire system, voltage 0-5V three-wire system, voltage 0-10V three-wire system, RS485, pulse, SSI. (customized with special requirements).

MBA-MPS:Intrinsic safety explosion-proof cable displacement sensor,MBA-MPS installation size is the same as MPS installation size, the internal core component is high-precision, long-life multi-turn potentiometer, and obtained the intrinsic safety explosion-proof certificate, explosion-proof mark is Ex ia IIBT6 Ga, limited current two-wire system and RS485 signal output.

Attention:Waterproof and explosion-proof products are mainly based on MPS series bases.If other series need to be produced,they are all customized products. Please communicate with the production department befor determining.

WS:The direction of the outlet is universal, and the outlet of the pull rope can be pulled out diagonally without being perpendicular to the plane of the outlet.

注：以上选型不代表每种组合的都会生产，具体以实际生产情况沟通为准。

Note: The above selection does not mean that every combination will be produced. The specific production situation shall be subject to communication.

安装注意事项 Installation Precautions

1、电气连接请按照传感器上的接线说明接线，确保传感器正确接线才能通电；利用固定螺丝孔或磁铁，依现场及机器安装空间设施需要,直接安装或另加保护或其他机械使用。

1.Please follow the wiring instructions on the sensor for electrical connections to ensure that the sensor is correctly wired before it can be powered on;The use fixed screw holes or magnets, as required by the site and machine installation space facilities, direct installation or additional protection or other mechanical use.

2、不锈钢钢丝绳安装时，需确保拉线处于平行于出线口拉出，避免钢丝绳被出线口反复摩擦导致断裂；（不锈钢索安装时，使钢索绳由出线口至移动部位机件工作处于平行滑动，保持较小角度﹙容许偏差正负3度﹚，以确保测量精度及钢索之寿命）。

2.When installing stainless steel wire ropes, it is necessary to ensure that the pulling wire is pulled out parallel to the outlet to avoid the wire rope being repeatedly rubbed by the outlet and causing it to break; When installing stainless steel cables, the steel cable should slide parallel from the outlet to the moving parts, maintaining a small angle (allowable deviation of plus or minus 3 degrees) to ensure measurement accuracy and the lifespan of the steel cable.

3、确保拉线处于平行于出线口拉出，保持较小角度（ 容许偏差＋/-3°）以确保量测精度及钢索之寿命。钢索本体是多股不锈钢钢丝SUS316材质，外层为尼龙涂层,请勿让其受外力的割伤、烧损、撞击等不当之事发生：过量的粉尘、积屑或是足以破坏钢索的物品贮留于内部的滑轮或出线口将造成钢索破损，导致运转不顺的故障。

3.Ensure that the cable is drawn parallel to the outlet, and maintain a small Angle (allowable deviation +/-3°) to ensure measurement accuracy and cable life. The steel cable body is multi-strand stainless steel wire SUS316 material, the outer layer is nylon coating, do not let it be cut by external force, burn, impact and other improper things occur: excessive dust, debris accumulation or enough to damage the steel cable stored in the internal pulley or outlet will cause damage to the steel cable, resulting in bad operation of the fault.

4、若使用于非直线运动的机构，请加装适当的滑轮运转转向不同方向拉出；若使用于环境恶劣或特殊场合，请自行加装保护机构。

4. If it is used in the mechanism of non-linear movement, please install the appropriate pulley to run in different directions to pull out; If used in harsh environment or special occasions, please install your own protection mechanism.

5、8米及以上拉绳尺（L型及XL型拉绳尺）为避免运输中传感器内部震动，装有锁止螺丝，使用前需拆除螺丝，拉绳才可顺畅拉出，若不拆除锁止螺丝，强行拉出拉绳，有可能会损坏拉绳尺。

5. In order to avoid the internal vibration of the sensor during transportation, the locking screws are installed. The screws must be removed before use, so that the rope can be pulled out smoothly. If the locking screws are not removed and the rope is pulled out forcibly, the rope ruler may be damaged.

6、M机座及以下系列产品往复运动瞬间加速不可超过1000mm/秒；L机座及以上系列产品往复运动瞬间加速不可超过500mm/秒；否则将导致钢索断裂，恕本公司不承担正常使用范围以外的责任。

6. M frame and the following series of products reciprocating instantaneous acceleration shall not exceed 1000mm/ SEC; L The instantaneous acceleration of the reciprocating motion of the frame and above series products shall not exceed 500mm/ s; Otherwise, the cable will be broken, and the company will not assume the responsibility outside the normal use range.

7、拉绳位移传感器属于精密仪器，请勿敲击或撞击，注意传感器和钢丝绳的清洁，以延长使用寿命；（钢索本体是不锈钢，外覆耐磨防腐塑胶层，请勿让其受外力的割伤、烧损、撞击等不当之事发生；过量的粉尘、积屑会破坏钢索或贮留于内部的滑轮，或将造成钢索破损，导致运转不顺的故障）。

7. The rope displacement sensor is a precision instrument. Do not knock or impact it. Pay attention to the cleanliness of the sensor and wire rope to extend its service life; (The steel cable body is made of stainless steel and covered with a wear-resistant and anti-corrosion plastic layer. Do not let it be cut, burned, or hit by external forces. Excessive dust and debris can damage the steel cable or the pulleys stored inside, or cause damage to the steel cable, resulting in poor operation).

8、未安装于工作台或固定坐前，请勿用手或是其它产品将钢索拉出并让其瞬间自行弹回，此举将造成钢索断裂,伤害本体结构及人身安全；拉线拉出后不要松开，需匀速拉出和缩回。

8. Do not use your hands or other products to pull out the steel cable before installation on the workbench or in front of the fixed seat, and let it instantly rebound on its own. This will cause the steel cable to break, damage the structure and personal safety of the body; After pulling out the cable, do not loosen it. It needs to be pulled out and retracted at a constant speed.

注:若使用于室外或环境比较恶劣等特殊场合，可配置米朗防水防尘出线口和防护外壳，或请自行加装保护机构或与本公司联系定制加装保护机构，否则导致产品损坏，公司不予负责！

Note: If used in outdoor or harsh environments or other special occasions, Mirang waterproof and dustproof outlet and protective shell can be configured, or please install a protective mechanism yourself or contact our company to customize the installation of a protective mechanism. Otherwise, the company will not be responsible for product damage!

安装说明 Installation Instructions

（因公司产品型号较多，安装方式也较多，有滑动支架螺丝安装式、固定螺丝孔安装式、磁吸式等），以下为常见的滑动支架螺丝安装式举例说明：

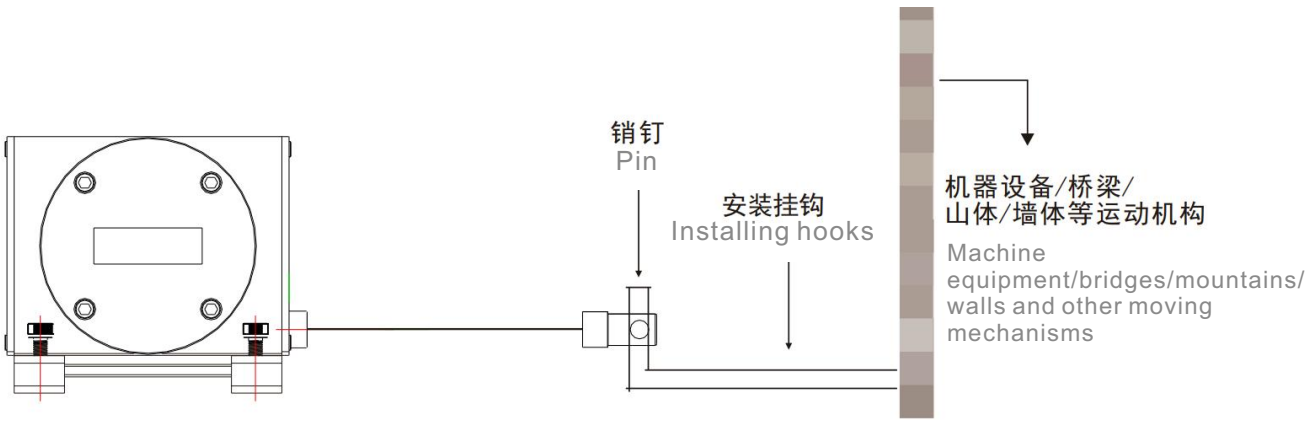
(Due to the variety of product models and installation methods in the company, there are sliding bracket screw installation, fixed screw hole installation, magnetic suction installation, etc.) The following are common examples of sliding bracket screw installation:

1.先固定安装支架：将安装支架顺着传感器底部凹槽滑入，然后调整支架的位置，将螺丝插入安装孔固定在安装面；

1. Fix the mounting bracket first: slide the mounting bracket along the groove at the bottom of the sensor, then adjust the position of the bracket, insert the screw into the mounting hole and fix it on the mounting surface;

2.测量端做L型销钉或者螺丝插入传感器安装头5mm的孔中固定传感器测头（或其它可靠连接方式）

2. Insert an L-shaped pin or screw into the 5mm hole of the sensor mounting head at the measuring end to fix the sensor measuring head (or other reliable connection methods)



产品特性 Product Characteristics

拉绳位移传感器按工作原理可分为电位器原理和磁感应原理，MPS系列、SM系列、WEP系列、MDS系列、WS系列均为电位器原理，其中MPS系列规格齐全，有多种不同外形尺寸可供选择，可满足绝大部分安装场景，WS系列可将拉绳头倾斜45°拉出，SM系列、WEP系列、MDS系列的安装位置和外形结构均不相同，可根据现场安装环境选择合适的拉绳位移传感器。MBA-MPS系列为本安防爆型拉绳位移传感器，MBA-MPS安装尺寸跟MPS安装尺寸相同。

The cable displacement sensor can be divided into potentiometer principle and magnetic induction principle according to the working principle. MPS series, SM series, WEP series, MDS series and WS series are all potentiometer principles, among which MPS series has complete specifications and a variety of different dimensions to choose from, which can meet most installation scenarios. WS series can tilt the cable head 45° to pull out. The SM series, WEP series, and MDS series have different installation positions and shapes. You can select the appropriate cable displacement sensor according to the onsite installation environment. MBA-MPS series is an intrinsically safe and explosion-proof cable displacement sensor. MBA-MPS installation size is the same as MPS installation size.

MPSFS2系列、SMZFS2系列、WEPZFS2、MPSZFS2、MFB-MPSFS2系列、MFB-MPSZFS2、MFB-MPSZLFS2系列均为磁感应原理，其中MPSFS2系列、SMZFS2系列、WEPZFS2、MPSZFS2系列为防水型拉绳位移传感器，可以在深水中使用，防护等级可达IP68；MFB-MPSFS2系列、MFB-MFBZFS2系列、MFB-MPSZLFS2系列为防水防爆位移传感器，获得专业隔爆证书。

MPSFS2 series, SMZFS2 series, WEPZFS2, MPSZFS2, MFB-MPSFS2 series, MFB-MPSZFS2 series, MFB-MPSZLFS2 series are all magnetic induction principles. Among them, MPSFS2 series, SMZFS2 series, WEPZFS2, MPSZFS2 series are waterproof rope displacement sensors, which can be used in deep water, and the protection level can reach IP68; MFB-MPSFS2 series, MFBZFS2 series, MFB-MPSZLFS2 series are waterproof and explosion-proof displacement sensors, and have obtained professional flameproof certificates.

产品外壳材质大部分为高性能工业铝合金，表面氧化处理，表面氧化的颜色可以定制，美观大方，并且具有防静电，抗干扰，不导电等特点。

The shell material of the product is mostly high-performance industrial aluminum alloy, surface oxidation treatment, the color of surface oxidation can be customized, beautiful and generous, and has the characteristics of anti-static, anti-interference, non-conductive

电阻输出的拉绳位移传感器，600mm及600mm以下量程默认电阻值为5KΩ，600mm以上量程电阻值默认为10KΩ（600mm以上的拉绳位移传感器如果需要电阻值为5KΩ，下单时需提前备注）。拉绳位移传感器所使用的钢丝绳为多股不锈钢钢丝SUS316材质，外层为尼龙涂层，M型及以下外形尺寸默认使用0.8mm线径的钢丝绳，L型及以上尺寸默认使用1.5mm线径的钢丝绳；M型及以下外形尺寸也可以备注使用线径1.5mm的钢丝绳，但是外形尺寸不变的情况下，钢丝绳线径变粗，可做的最大量程也会相应的缩短，以M型拉绳尺举例，使用线径0.8mm的钢丝绳，最大量程可做到4000mm,若使用线径1.5mm的钢丝绳，则最大量程只能做到2000mm。

The default resistance of the cable displacement sensor output resistance is 5KΩ for ranges shorter than 600mm, and 10KΩ for ranges longer than 600mm. (If the resistance of the cable displacement sensor larger than 600mm is 5KΩ, Note in advance when placing an order.)The steel wire rope used by the pull rope displacement sensor is made of multi-strand stainless steel wire SUS316, the outer layer is nylon coated, the steel wire rope of 0.8mm wire diameter is used by default in the shape size of M type and below, and the steel wire rope of 1.5mm wire diameter is used by default in the shape size of L type and above. M type and the following dimensions can also be noted to use wire rope with wire diameter of 1.5mm, but if the outline size remains unchanged, the wire rope diameter becomes thicker, and the maximum measuring range that can be made will be shortened accordingly. For example, using wire rope with wire diameter of 0.8mm, the maximum measuring range can be 4000mm. If wire rope with wire diameter of 1.5mm is used, the maximum measuring range can be 4000mm. The maximum range can only be 2000mm.

不同外形尺寸的拉绳位移传感器，能做的最大量程均有所不同，例如MPS-S型的拉绳尺，量程范围是100-1300mm之间量程任意可选，最小量程可做到100mm,即测量范围是0-100mm；最大量程可做到1300mm，即测量范围是0-1300mm。可以根据客户的需要定做。

Different dimensions of the rope displacement sensor, can do the maximum range are different, such as MPS-S type of rope ruler, the range is 100-1300mm range optional, the minimum range can be 100mm, that is, the measurement range is 0-100mm; The maximum range can be 1300mm, that is, the measuring range is 0-1300mm. Can be customized according to customer needs.

专业术语 Terminology

传感器/编码器的精度主要包含线性精度、分辨率和重复精度这三个参数。这三个参数，一般都是取多次测量之后的最大值为依据。 线性精度、分辨率和重复精度是传感器/编码器性能的三个重要指标。高分辨率并不直接等同于高精度，因为高分辨率只是表示传感器/编码器能够区分更多的单位，但并不保证每个单位的测量都准确。

The accuracy of the sensor/encoder mainly includes three parameters: linearity accuracy, resolution and repetition accuracy. These three parameters are generally based on the maximum value after multiple measurements. Linear accuracy, resolution and repeatability are three important indicators of sensor/encoder performance. High resolution is not directly equivalent to high precision, because high resolution simply means that the sensor/encoder can distinguish more units, but does not guarantee that every unit of measurement is accurate.

线性精度：是指输出值与真实值之间的差异，即传感器/编码器检测到的位置与实际位置之间的偏差。计算方法为：线性精度=（理论值-实际测试值）÷满量程 x 100%。

Linear accuracy:Refers to the difference between the output value and the true value, that is, the deviation between the position detected by the sensor/encoder and the actual position. The calculation method is: linear accuracy = (theoretical value - actual test value) ÷ full scale x 100%.

分辨率：是指传感器/编码器能够区分的最小单位，例如：一个电位计原理模拟量输出的位移传感器，其分辨率是无限小的；一个磁致伸缩原理输出的位移传感器，其分辨率受波导丝材料、内部芯片和电路处理等因素，其分辨率大概为0.01mm； 一个单圈2000个脉冲输出的增量式编码器，那编码器的轴转动一圈输出为2000个脉冲，其分辨率为2000P/R；一个单圈12位的绝对值编码器可以将360度分为4096等份；以12位芯片举例，12位即为2^{12}=4096，量程/4096= 分辨率，例如2000mm量程RS485 信号输出的拉绳位移传感器，分辨率为2000/4096=0.48mm。如果选用16位芯片，16位即为2^{16}=65536，量程/65536 =分辨率，例如2000mm量程RS485信号输出的拉绳尺位移传感器，分辨率为2000/65536=0.03mm。拉绳位移传感器默认分辨率为12位，可选16位。

Resolution ratio:Refers to the sensor/encoder can distinguish the smallest unit, for example: a potentiometer principle analog output of the displacement sensor, its resolution is infinitely small; A magnetostrictive principle output displacement sensor, its resolution depends on the waveguide wire material, internal chip and circuit processing and other factors, its resolution is about 0.01mm; An incremental encoder with 2000 pulse output per turn, the shaft of the encoder rotates one turn to output 2000 pulses, and its resolution is 2000P/R; A single-turn 12-bit absolute encoder can divide 360 degrees into 4096 equal parts; Take 12-bit chip as an example, 12-bit is 212=4096, range /4096= resolution, for example, 2000mm range RS485 signal output rope displacement sensor, resolution is 2000/4096=0.48mm. If the 16-bit chip is selected, the 16-bit is 216=65536, range /65536= resolution, for example, the drawstring ruler displacement sensor with 2000mm range RS485 signal output has a resolution of 2000/65536=0.03mm. The default resolution of the cable displacement sensor is 12 bits (optional: 16 bits).

重复精度：是指在同一个实际位置，传感器/编码器在后续在这个实际位置时候取得的不同测量值之间的误差。

Repeated accuracy:It refers to the error between different measurement values obtained by the sensor/encoder at the same actual position in the future.

影响传感器/编码器精度的因素：传感器/编码器的精度不仅仅取决于其自身的精度和分辨率，还受到其他因素的影响。例如，机械结构的设计、伺服电机的性能、伺服驱动器的性能、运动控制器的性能以及环境温度等都会影响传感器/编码器的最终精度。因此，在选择和使用传感器/编码器时，需要综合考虑这些因素，以确保系统的整体性能。

Factors affecting sensor/encoder accuracy:The accuracy of the sensor/encoder depends not only on its own accuracy and resolution, but also on other factors. For example, the design of mechanical structure, the performance of servo motor, the performance of servo driver, the performance of motion controller, and the ambient temperature will affect the final accuracy of the sensor/encoder. Therefore, when selecting and using sensors/encoders, these factors need to be taken into account to ensure the overall performance of the system.

关于脉冲输出 About Pulse Output

由于脉冲信号输出的拉绳传感器所选配的编码器种类较多，供电电压和产品的分辨率会有所不同。具体供电电压及接线定义以产品实物标签上标注为准（通常为8-30V宽电压，但也有部分型号为5V电压，接入其他电压可能会导致烧坏）。

Because there are many types of encoders available for pulse-signal output rope sensors, the supply voltage and product resolution will be different. The specific supply voltage and connection definition are subject to the label of the product (usually 8-30V wide voltage, but some models are 5V voltage, and other voltages may cause burnout).

由于行程不同所以主体尺寸大小会不同，因此其内部的线轮外径也不同，这些线轮转一圈就相当于编码器转一圈，拉绳是盘绕在线轮上的，拉绳拉出一点，线轮就会转动一点，所以拉绳的拉出位移分辨率与拉绳尺尺寸大小和选择装配的编码器种类有关（部分标准请参考下表），拉绳尺具体分辨率以产品实物标签上标注的分辨率为准，或者提前咨询我司业务员及技术人员确认。

Due to the different travel so the main size will be different, so its internal wire wheel outside diameter is different, these wire wheel turn a circle is equivalent to the encoder turn a circle, the rope is coiled on the online wheel, the rope pulls out a little, the wire wheel will turn a little, Therefore, the pull out displacement resolution of the rope is related to the size of the rope ruler and the type of encoder selected for assembly (please refer to the following table for some standards), the specific resolution of the rope ruler is determined by the resolution marked on the product physical label, or consult our salesman and technical personnel in advance to confirm.

编码器每圈脉冲数越高，精度会越好，但并不是越高越实用，具体要看客户的PLC的接收脉冲信号的速度，如果脉冲数过高，拉绳运动速度过快，PLC未必能高速采集到所有脉冲信号，如PLC采集速度较慢，就会导致数据失真，会漏掉脉冲数。所以要选用适当的编码器才行，目前我司的标准默认使用的编码器标准为每圈2000个脉冲的，如有其他需求，也可以更改）。

The higher the number of pulses per turn of the encoder, the better the accuracy, but not the higher the more practical, the specific depends on the speed of the customer's PLC to receive the pulse signal, if the pulse number is too high, the rope movement speed is too fast, the PLC may not be able to collect all the pulse signals at high speed, such as the PLC acquisition speed is slow, it will lead to data distortion, will miss the number of pulses. Therefore, it is necessary to choose the appropriate encoder, the current standard of our company default encoder standard is 2000 pulses per circle, if there are other needs, can also be changed).

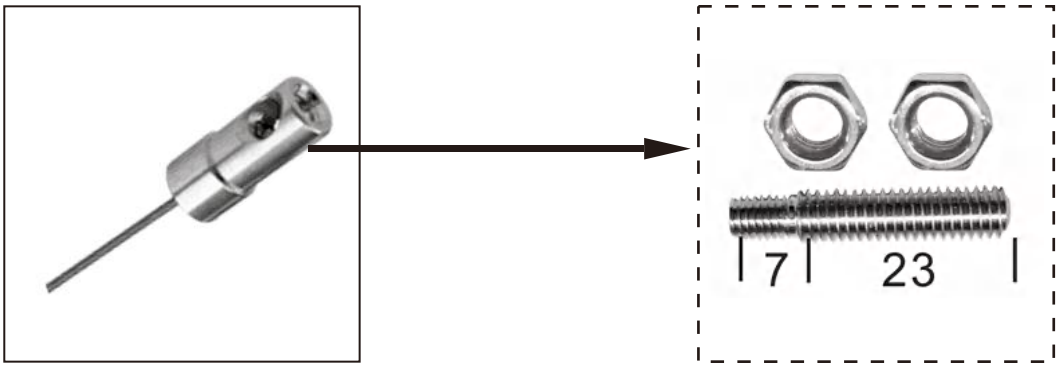
拉绳位移传感器（脉冲输出）参数 Rope displacement sensor (pulse output) reference data			
检测方式 Detection	增量型 Incremental	最大响应频率 Maximum response frequency	10kHz~50kHz
输出波形 Output waveform	脉冲方波 Pulse square wave	波形上下时间 Waveform up and down time	≤2
输出相 Output phase	AB相或ABZ相 AB phase or ABZ phase	工作温度 Operating temperature	-10℃~65℃
相位差 Phase difference	A、B相异90℃+45℃(T/4+T/8)，Z相T+T/2 A. B phase 90 °C+45 °C (T/4+T/8), Z phase T+T/2		

下表为2000脉冲数拉绳位移传感器分辨率参数，其他常用编码器有600、1000、2000、2500、3600等脉冲数，具体参数请联系我们咨询。计算分辨率的时候，用：（线轮的直径+线的直径）*3.1415926/2000得出的就是分辨率了（其中2000代表采用的编码器每圈脉冲数为2000个脉冲的，如果采用的编码器每圈脉冲数是其他，就将2000改为其他数即可。

The following table is the resolution parameters of the 2000 pulse number rope displacement sensor, other commonly used encoders have 600, 1000, 2000, 2500, 3600 and other pulse numbers, please contact us for specific parameters.When calculating the resolution, use: (the diameter of the wire wheel + the diameter of the line) *3.1415926/2000 to obtain the resolution (2000 represents the number of pulses per turn of the encoder for 2000 pulses, if the number of pulses per turn of the encoder is other, 2000 can be changed to other numbers.

分辨率/解析 Resolution/resolution			
MPS-XS型 MPS-XS type	0-1000mm：0.05mm/P； 1000-1200mm:0.06mm/P	MPS-S型 MPS-S type	0-1000mm：0.05mm/P； 1000-1300mm:0.065mm/P
MPS-M型 MPS-M type	1000-4000mm:0.1mm/P	MPS-L型 MPS-L type	4000-6000mm：0.15mm/P； 6000-10000mm:0.2mm/P

拉绳尺拉线端接头选择标准 Standard for selection of cable end joint



标配
Standard configuration

可在标配基础上另选配：
M5内牙转M6外牙接头
Available on the basis of standard:
M5 inner tooth to M6 outer tooth connector

选配
（G：标准挂扣式连接头）
Selective assembly
(G: Standard hook connector)

选配
（G1：挂扣式连接头）
Selective assembly
(G1: indicates a hanging connector)

选配
（G2：挂扣式连接头）
Selective assembly
(G2: indicates a hanging connector)

SM/WS/MDS/MPS/MBA-MPS接线定义Connection Definition

电阻信号 Resistance signal	棕BROWN 电源正 Power Positive DC5~10V	蓝色BLUE 电源负 Power Negative 0V	黑色BLACK 输出 Output	屏蔽线 Shielding wire 接大地 GROUNDING GND		
电压信号 Voltage signal 0-5V 0-10V	棕BROWN 电源正 Power Positive DC12~24V	蓝色BLUE 电源负 Power Negative 0V	黑色BLACK 输出 Output	屏蔽线 Shielding Wire 接大地 GROUNDING GND		
电流信号 Current signal 4-20mA 2线制 2-Wire system	棕BROWN 电源正 Power Positive DC12~24V	黑色BLACK 输出 Output	屏蔽线 Shielding Wire 接大地 GROUNDING GND			
电流信号 Current signal 4-20mA 3线制 3-Wire system	棕BROWN 电源正 Mains positive DC12~24V	蓝色BLUE 电源负 Power Negative 0V	黑色BLACK 输出 Output	屏蔽线 Shielding Wire 接大地 GROUNDING GND		
电流信号 Current signal 4-20mA 4线制 4-Wire system	棕BROWN 电源正 Power Positive DC12~24V	蓝色BLUE 输出 + Output +	黑色BLACK 电源负 Power Negative 0V	白色WHITE 输出 - Output -	屏蔽线 Shielding Wire 接大地 GROUNDING GND	
RS485信号 RS485 signal	红RED 电源正 Power Positive DC12~24V	蓝色/绿色 BLUE/GREEN RS485 A	黑色BLACK 电源负 Power Negative 0V	白色WHITE RS485 B	屏蔽线 Shielding Wire 接大地 GROUNDING GND	
脉冲信号 Pulse signal NPN 标准 Standard	红RED 电源正 Power Positive DC8~30V	白色WHITE 电源负 Power Negative 0V	蓝色BLUE A 相 A Phase	绿色GREEN B 相 B Phase	黄色YELLOW Z 相 Z Phase	屏蔽线 Shielding Wire 接大地 GROUNDING GND
脉冲差分信号 Pulse difference signal	红RED 电源正 Power Positive 5V	白色WHITE 电源负 Power Negative 0V	蓝色BLUE A 相 A Phase	绿色GREEN B 相 B Phase	黄色YELLOW Z 相 Z Phase	灰色GRAY A-	棕BROWN B-	黑BLACK Z-

由于脉冲信号输出的拉绳传感器所选配的编码器种类较多，供电电压和产品的分辨率会有所不同。具体供电电压以产品实物标签上标注的电压为准（通常为8-30V宽电压，但也有部分型号为5V电压，接入其他电压可能会导致烧坏）；具体分辨率以产品实物标签上标注的分辨率为准，或者提前咨询我司客户及技术人员确认。

Because there are many types of encoders available for pulse-signal output rope sensors, the supply voltage and product resolution will be different. The specific power supply voltage is subject to the voltage marked on the physical label of the product (usually 8-30V wide voltage, but some models are 5V voltage, access to other voltages may lead to burnout); The specific resolution shall be the resolution marked on the physical label of the product, or consult our customers and technical personnel to confirm in advance.

MPSFS2/MPSZFS2/MFB-MPSFS2接线方式Connection

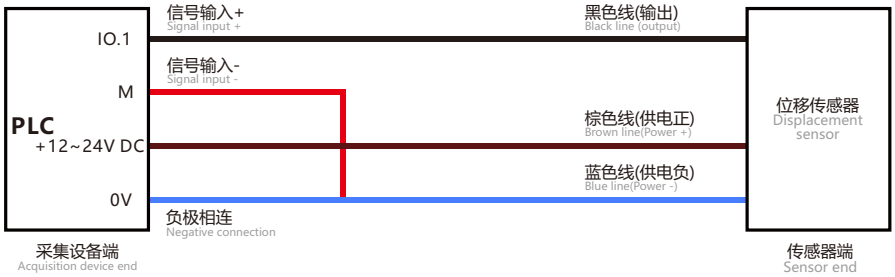
电流/电压信号 Current/voltage signal	红色RED 电源正 Power Positive DC12~24V	黑色BLACK 电源负 Power Negative 0V	黄色YELLOW 输出 Output	屏蔽线 Shielding Wire 接大地 GROUNDING GND		
RS485信号 RS485 signal	红色RED 电源正 Power Positive DC12~24V	黑色BLACK 电源负 Power Negative 0V	绿色GREEN RS485 A	屏蔽线 Shielding Wire 接大地 GROUNDING GND	白色WHITE RS485 B	
SSI信号 SSI signal	红色RED 电源正 Power Positive DC12~24V	黑色BLACK 电源负 Power Negative 0V	绿色GREEN D+	黄色YELLOW C-	蓝色BLUE C+	白色WHITE D-

以上接线定义仅供参考，具体供电电压及接线定义以产品实物标签上标注为准。

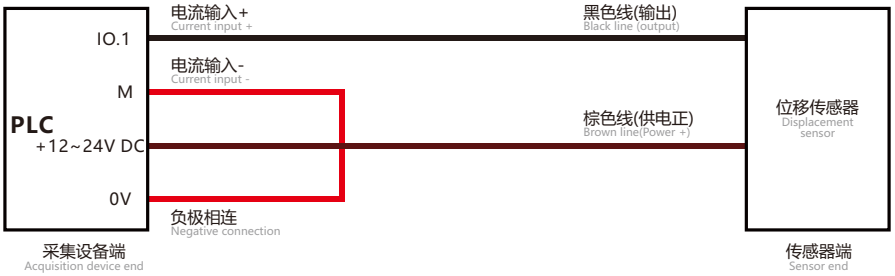
The preceding cable connection definitions are for reference only. For the specific power supply voltage and cable connection definitions, refer to the labels on the product.

接线示意图 Schematic Diagram

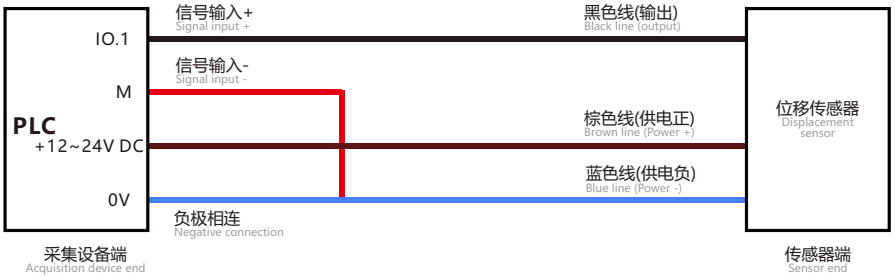
●电位器原理传感器PLC接入型接线图
Potentiometer principle sensor PLC access wiring diagram



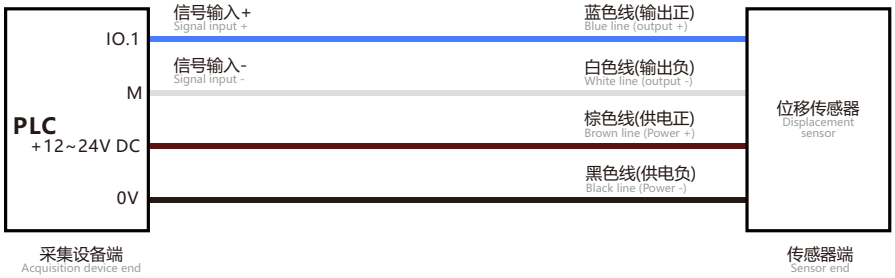
●二线电流输出PLC接入型接线图
Two wire current output PLC access wiring diagram



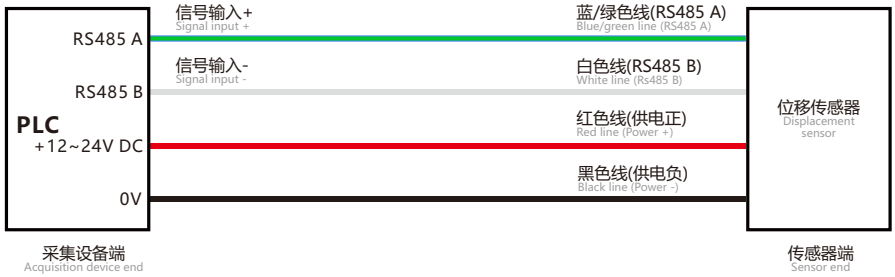
●三线电流/电压输出PLC接入型接线图
Three-wire current/voltage output PLC access wiring diagram



●四线电流/电压输出PLC接入型接线图
Four-wire current/voltage output PLC access wiring diagram



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



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。
The preceding cables are for reference only. For details about the power supply voltage and cable connection, refer to the labels on the product.

MPS-XXXS/XXS/XS 拉绳位移传感器

MPS-XXXS/XXS/XS Rope Displacement Sensor

产品实物图 Physical Products pictures

MPS-XXXS

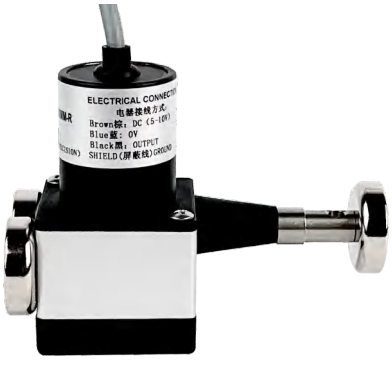
支架安装式 Bracket mounted

MPS-XXS

支架安装式 Bracket mounted

MPS-XXS

磁吸安装式 Magnetic mounting type



MPS-XS

支架安装式 Bracket mounted

MPS-XS

磁吸安装式 Magnetic mounting type

产品概述 Overview

MPS-XXXS、MPS-XXS、MPS-XS 拉绳位移传感器，又称拉绳裂缝计，裂缝位移传感器，拉绳编码器，拉绳尺，拉线尺，拉线编码器，拉线位移传感器，是直线位移传感器在结构上的精巧集成，充分结合了角度传感器和直线位移传感器的优点，成为一款结构紧凑、测量行程长、安装空间尺寸小、具有高精度测量的优良传感器。该拉绳位移传感器系列产品具有很大的选择空间，MPS-XXXS行程从100mm至350mm不等，MPS-XXS行程从100mm至1000mm不等，MPS-XS行程从100mm至1200mm不等，具有模拟电流信号A2：4-20mA电流输出二线制，电流信号A3：4-20mA电流输出三线制，电流信号A4：4-20mA电流输出四线制；模拟电压信号V1：0-5V；V2：0-10V和脉冲信号P：A、B、Z相数字输出，RS485数字信号输出。满足大行程、高精度各种信号需求。

MPS-XXXS, MPS-XXS, and MPS-XS rope displacement sensors, also known as rope crack gauges, crack displacement sensors, rope encoders, rope rulers, rope rulers, rope encoders, and rope displacement sensors, are exquisite integrations of linear displacement sensors in structure. They fully combine the advantages of angle sensors and linear displacement sensors, making them a compact structure, long measurement stroke, and small installation space Excellent sensor with high-precision measurement. The rope displacement sensor series has a large selection space, with MPS-XXXS stroke ranging from 100mm to 350mm, MPS-XXS stroke ranging from 100mm to 1000mm, and MPS-XS stroke ranging from 100mm to 1200mm. It has an analog current signal A2: 4-20mA current output two wire system; Current signal A3: 4-20mA current output three wire system; Current signal A4: 4-20mA current output four wire system; Simulated voltage signal V1: 0-5V; V2: 0-10V and pulse signal P: A, B, Z-phase digital output, RS485 digital signal output. Meet various signal requirements for long travel and high precision.

性能参数 Performance Parameter

性能指标 Performance Index

产品系列 Product series	型号 Model	信号输出方式 Signal output mode
XXXS型 XXXS Tyep	MPS-XXXS-(100mm-350mm)-R	量程≤600mm,电阻：0-5KΩ±10%FS Measuring range ≤600mm, resistance: 0-5KΩ±10%FS
XXS型 XXS Type	MPS-XXS-(100mm-1000mm)-R	量程≤600mm,电阻：0-5KΩ±10%FS; 量程＞600mm,电阻：0-10KΩ±10%FS Measuring range ≤600mm, resistance: 0-5KΩ±10%FS; Measuring range > 600mm, resistance: 0-10KΩ±10%FS
如需要电压、电流或者数字信号输出方式，可以另加变送器；如需要脉冲信号输出，需要选配小编码器 If voltage, current or digital signal output method is required, an additional transmitter can be added; If pulse signal output is required, a small encoder needs to be selected and equipped		
XS型 XS Type	MPS-XS-(100mm-1200mm)-R	量程≤600mm,电阻：0-5KΩ±10%FS; 量程＞600mm,电阻：0-10KΩ±10%FS Measuring range ≤600mm, resistance: 0-5KΩ±10%FS; Measuring range > 600mm, resistance: 0-10KΩ±10%FS
XS型 XS Type	MPS-XS-(100mm-1200mm)-V1/V2	V1:电压(0-5V)或V2(0-10V) V1: Voltage (0-5V) or V2 (0-10V)
XS型 XS Type	MPS-XS-(100mm-1200mm)-A3/A2	电流(4-20mA)A3:3线制或A2:2线制 Current (4-20mA) A3:3 wire or A2:2 wire
XS型 XS Type	MPS-XS-(100mm-1200mm)-P	常规编码器脉冲输出 Conventional encoder pulse output
XS型 XS Type	MPS-XS-(100mm-1200mm)-RS	RS485数字信号输出 RS485 digital signal output

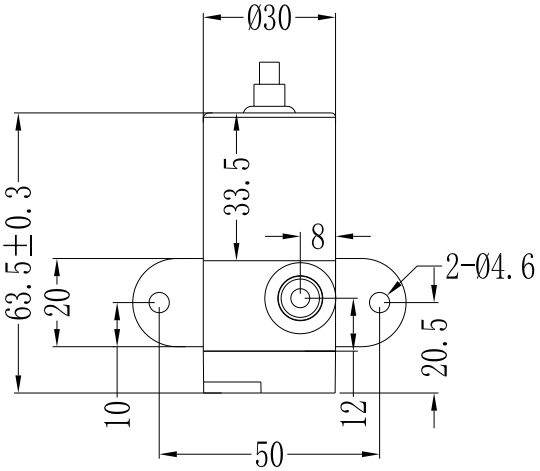
电气指标Electrical Specifications

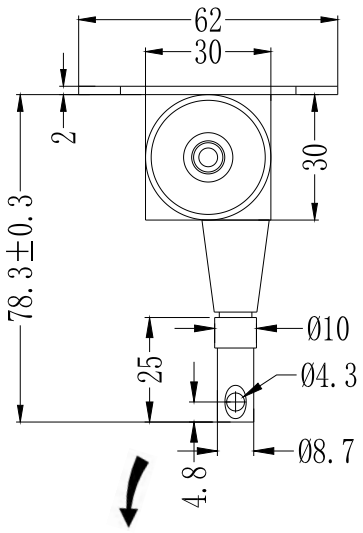
MPS-XXXS、MPS-XXS、MPS-XS拉绳位移传感器 MPS-XXXS, MPS-XXS, MPS-XS Rope displacement sensors	
线性精度 Linear accuracy	600mm以下±0.25%FS，600mm以上±0.1%FS Below 600mm ± 0.25% FS, above 600mm ± 0.1% FS
重复性精度 Repeatability accuracy	±0.02mm
分辨率 Resolution ratio	模拟量信号(电压、电流)：无断解析；数字量信号(RS485)：默认12位，可选16位 Analog signal (voltage, current) : no break analysis; digital signal (RS485) : 12 bits default,16 bits can be selected
储存环境 Environment	-20℃~ + 80℃
震动 Vibrate	10HZ-2000HZ
拉力 Pulling	< 600g
重量 Weight	≤600g
发条/弹簧材质 Spring/spring material	进口不锈钢 Imported stainless steel
最大拉伸速度 Maximum reciprocating speed	1000mm/秒 1000mm/second
输入电阻值 Input resistance value	量程≤600mm,电阻：0-5KΩ±10%FS；量程＞600mm,电阻：0-10KΩ±10%FS Measuring range ≤600mm, resistance: 0-5KΩ±10%FS; Measuring range > 600mm, resistance: 0-10KΩ±10%FS
保护等级 Protection level	IP65(只适用于外壳) IP65 (Only applicable to the shell)
功率 Power	70℃时1W(行程500mm),70℃时2W(行程1000mm) 1W at 70 °C (travel 500mm), 2W at 70 °C(travel 1000mm)
传感器 Sensor	1.(默认)绕线式多圈电位器； 2.(可选)光栅式多圈编码器；3.(可选)磁感应(磁电)多圈位置传感器 1.(Default) winding multi-turn potentiometer; 2.(Optional) raster multi-turn encoder; 3.(Optional) Magnetic induction (magnetoelectric) multi-turn position sensor
线径规格 Wire diameter specification	直径0.8mm的多股不锈钢钢丝SUS316L材质，外层为尼龙涂层，负载为16kg 0.8mm diameter multi strand stainless steel wire SUS316L material, with an outer layer of nylon coating and a load of 16kg
可选输出信号 Optional output signal	电位计输出(DC5-10V)，电流/电压/RS485信号输出(DC12-24V)，脉冲信号输出(DC8-30V) Potentiometer output (DC5-10V), current/voltage/RS485 signal output (DC12-24V), pulse signal output (DC8-30V)
工作温度 Operation temperature	-20℃~+75℃(低温状态下，需保持无结晶状态； 涂抹防冻液最低工作温度可达-35℃；脉冲输出工作温度为-10℃~65℃) -20℃~+75℃ (at low temperature, it should be kept in a non-crystalline state; The minimum working temperature of applying antifreeze can reach -35℃; Pulse output operating temperature is -10℃~65℃)

产品尺寸图 Product Dimension Diagram

MPS-XXXS

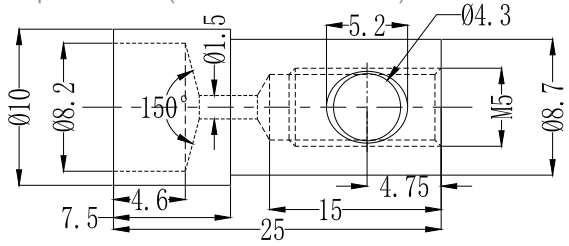
可选量程 Optional range:100-350mm





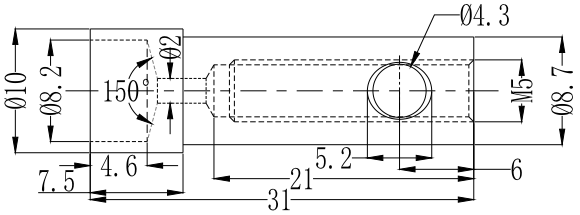
默认拉绳头尺寸（线径0.8mm）：

Default rope head size(Wire diameter 0.8mm):



可选拉绳头尺寸（线径1.5mm）：

Optional rope head size (Wire diameter 1.5mm):



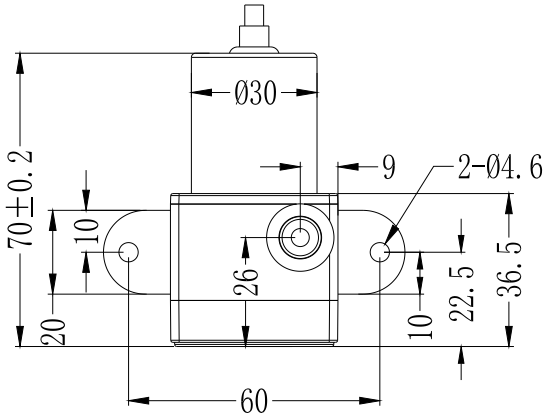
XXXS型拉绳位移传感器为脉冲信号输出时，所搭配的编码器不同，传感器尺寸也略有不同，需另行确认尺寸。

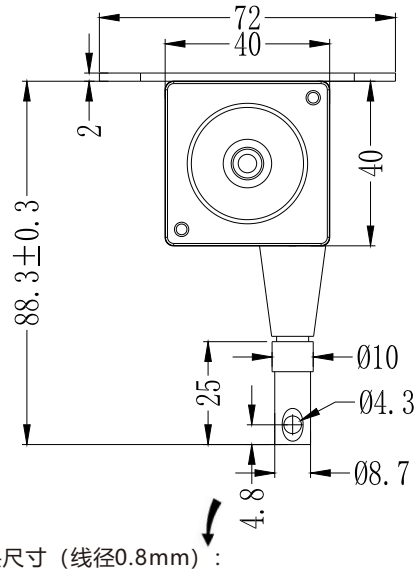
When the XXXS type pull rope displacement sensor is the pulse signal output, the sensor size is slightly different with the different encoder, and the size needs to be confirmed separately.

MPS-XXS

支架安装式 Bracket mounted

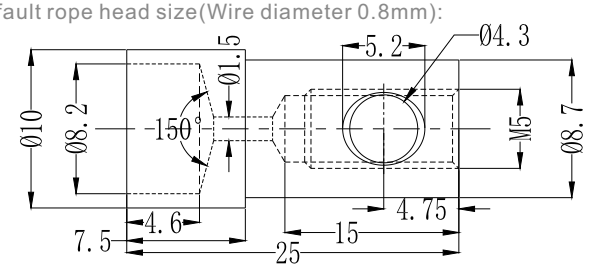
可选量程 Optional range:100-1000mm





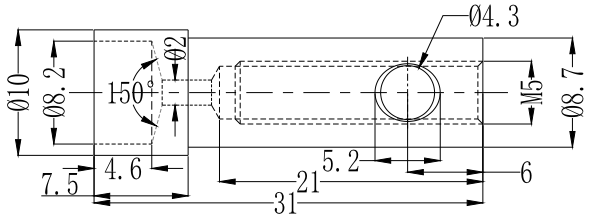
默认拉绳头尺寸（线径0.8mm）：

Default rope head size(Wire diameter 0.8mm):



可选拉绳头尺寸（线径1.5mm）：

Optional rope head size (Wire diameter 1.5mm):

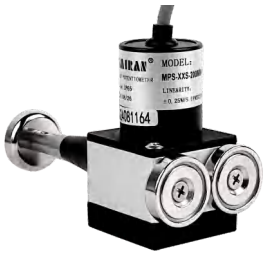


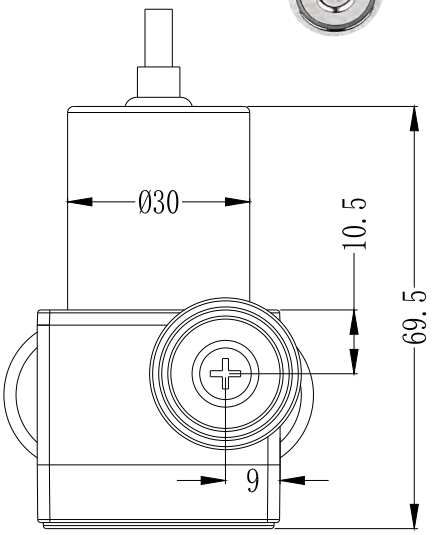
XXS型拉绳位移传感器为脉冲信号输出时，所搭配的编码器不同，传感器尺寸也略有不同，需另行确认尺寸。

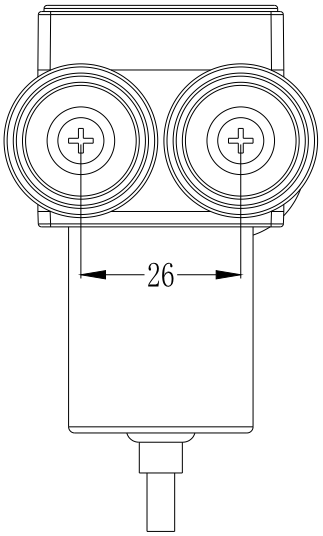
When the XXS type pull rope displacement sensor is the pulse signal output, the sensor size is slightly different with the different encoder, and the size needs to be confirmed separately.

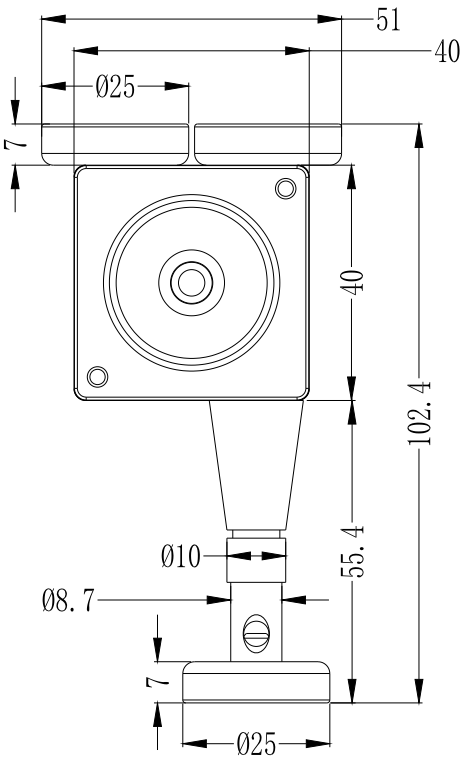
MPS-XXS

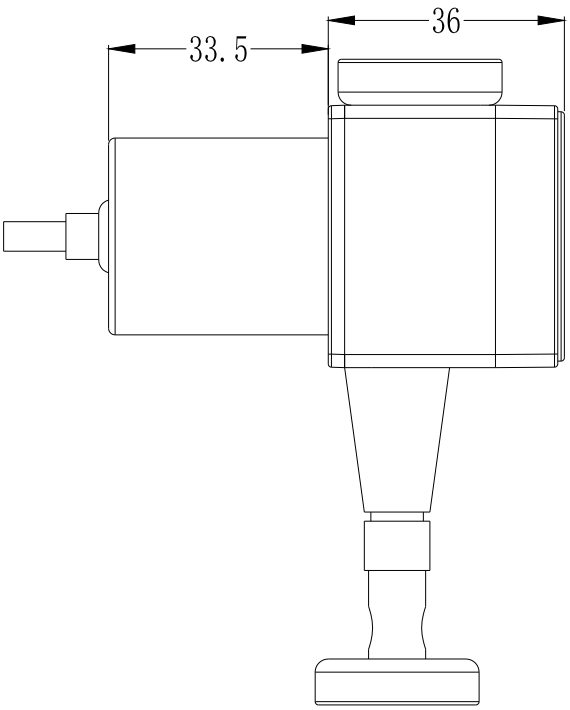
磁吸安装式 Magnetic mounting type
可选量程 Optional range:100-1000mm









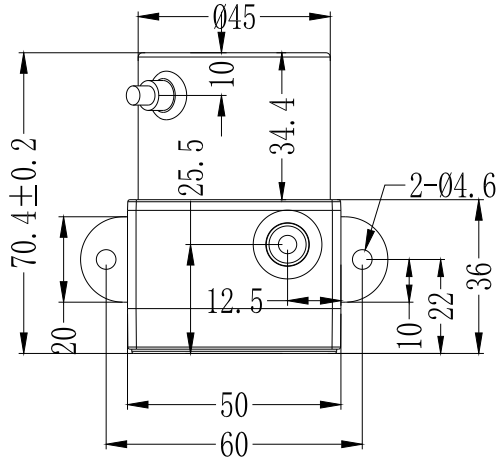


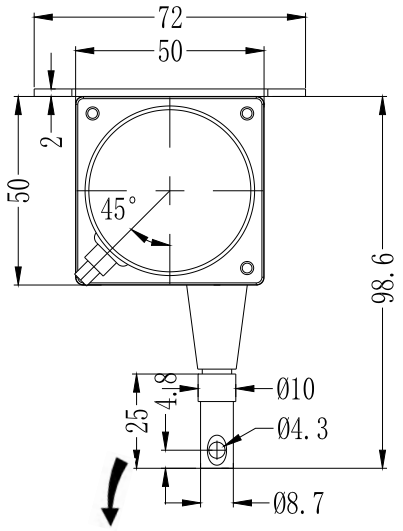
XXS型拉绳位移传感器为脉冲信号输出时，所搭配的编码器不同，传感器尺寸也略有不同，需另行确认尺寸。
When the XXS type pull rope displacement sensor is the pulse signal output, the sensor size is slightly different with the different encoder, and the size needs to be confirmed separately.

MPS-XS

支架安装式 Bracket mounted

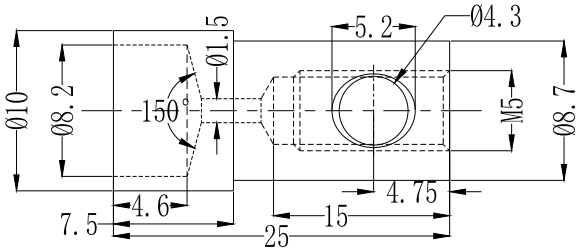
可选量程 Optional range:100-1200mm





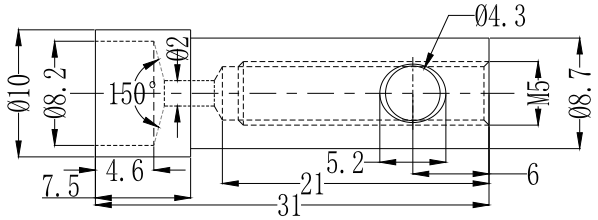
默认拉绳头尺寸（线径0.8mm）：

Default rope head size(Wire diameter 0.8mm):



可选拉绳头尺寸（线径1.5mm）：

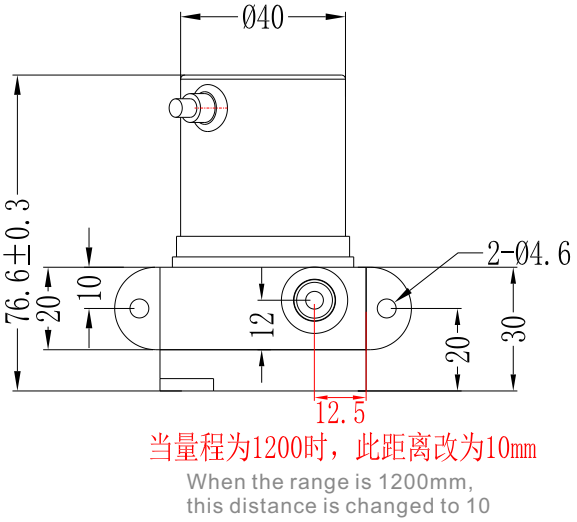
Optional rope head size (Wire diameter 1.5mm):



MPS-XS-P

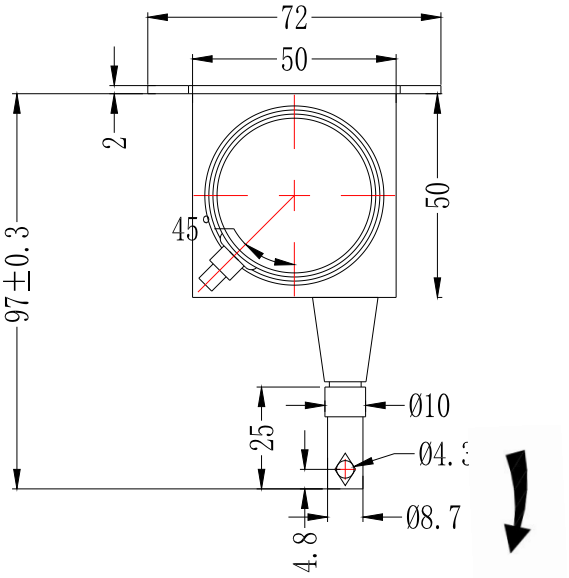
支架安装式 Bracket mounted

可选量程 Optional range:100-1200mm



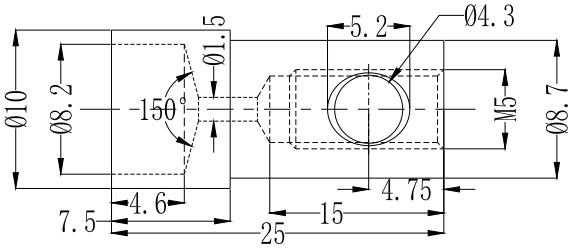
当量程为1200时，此距离改为10mm

When the range is 1200mm,
this distance is changed to 10



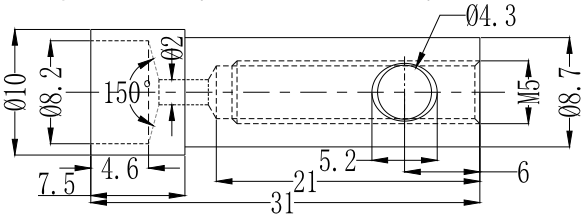
默认拉绳头尺寸（线径0.8mm）：

Default rope head size(Wire diameter 0.8mm):



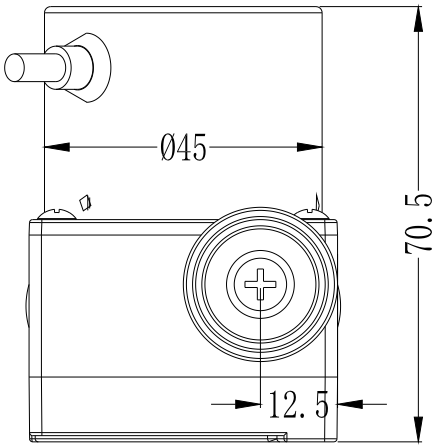
可选拉绳头尺寸（线径1.5mm）：

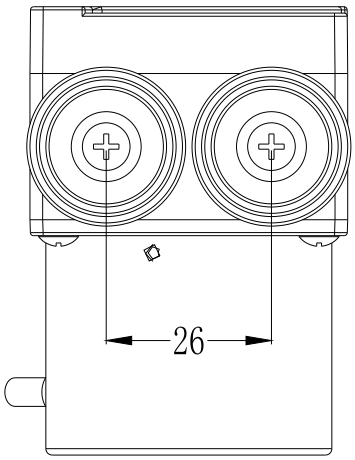
Optional rope head size (Wire diameter 1.5mm):

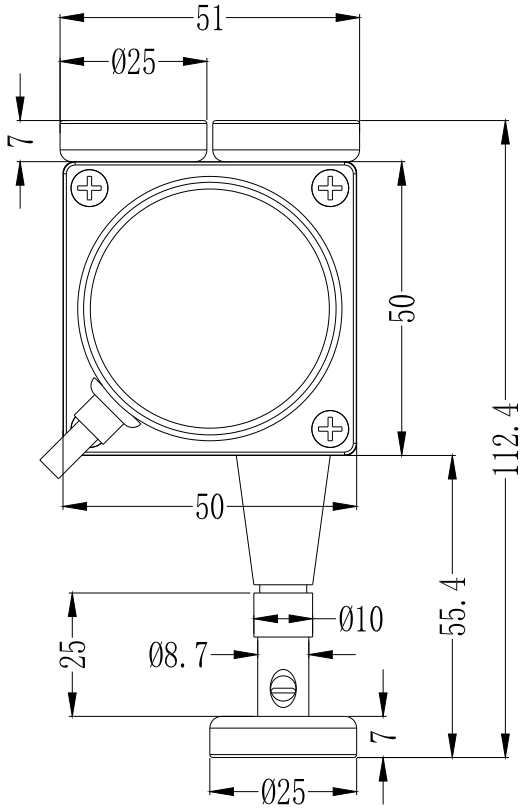


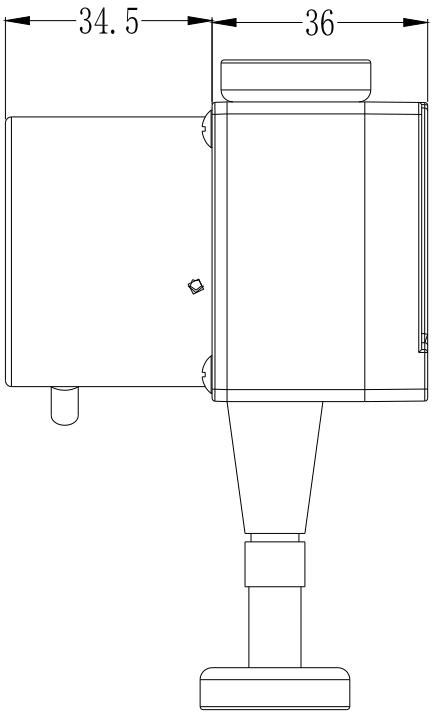
MPS-XS

磁吸安装式 Magnetic mounting type
可选量程 Optional range:100-1200mm









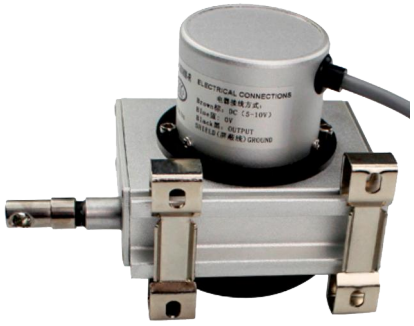
MPS-S/M/L/XL 拉绳位移传感器

MPS-S/M/L/XL Rope Displacement Sensor

产品实物图 Product Physical Pictures

MPS-S

支架安装式 Bracket mounted


MPS-S

磁吸安装式 Magnetic mounting type



MPS-M

支架安装式 Bracket mounted



MPS-M

磁吸安装式 Magnetic mounting type

MPS-L

支架安装式 Bracket mounted

MPS-L

磁吸安装式 Magnetic mounting type

MPS-XL

支架安装式 Bracket mounted

MPS-XL

磁吸安装式 Magnetic mounting type

产品概述 Overview

MPS-S/M/L/XL系列拉线位移传感器，又称拉绳编码器，拉绳尺，拉线尺，拉线编码器，拉绳位移传感器，是直线位移传感器在结构上的精巧集成，充分结合了角度传感器和直线位移传感器的优点，成为一款结构紧凑、测量行程长、安装空间尺寸小、具有高精度测量的优良传感器。MPS-S/M/L/XL系列拉线位移传感器系列产品具有很大的选择空间，行程从100mm至35000mm不等，具有模拟电流信号A2：4-20mA 电流输出二线制，电流信号A3：4-20mA电流输出三线制，电流信号A4：4-20mA电流输出四线制；模拟电压信号V1：0-5V，V2：0-10V和脉冲信号P：A、 B、Z相数字输出；RS485数字信号输出。满足大行程、高精度各种信号需求。

MPS-XXXS, MPS-XXS, and MPS-XS rope displacement sensors, also known as rope crack gauges, crack displacement sensors, rope encoders, rope rulers, rope rulers, rope encoders, and rope displacement sensors, are exquisite integrations of linear displacement sensors in structure. They fully combine the advantages of angle sensors and linear displacement sensors, making them a compact structure, long measurement stroke, and small installation space Excellent sensor with high-precision measurement. The rope displacement sensor series has a large selection space, with MPS-XXXS stroke ranging from 100mm to 350mm, MPS-XXS stroke ranging from 100mm to 1000mm, and MPS-XS stroke ranging from 100mm to 1200mm. It has an analog current signal A2: 4-20mA current output two wire system; Current signal A3: 4-20mA current output three wire system; Current signal A4: 4-20mA current output four wire system; Simulated voltage signal V1: 0-5V; V2: 0-10V and pulse signal P: A, B, Z-phase digital output, RS485 digital signal output. Meet various signal requirements for long travel and high precision.

性能参数 Performance Parameter

电气指标Electrical Specifications

MPS-S拉绳位移传感器 MPS-S Rope displacement sensor			
拉力 Pulling	< 600g	重量 Weight	≤600g
震动 Vibrate	10HZ-2000HZ	储存环境 Environment	-20℃~ + 80℃
防护等级 Protection grade	IP65（只限外壳） IP65 (Shell only)	最大拉伸速度 Maximum reciprocating speed	1000mm/秒 1000mm/second
重复性精度 Repeatability accuracy	±0.02mm	发条/弹簧材质 Spring/spring material	进口不锈钢 Imported stainless steel
线性精度 Linear accuracy	600mm以下±0.25%FS，600mm以上±0.1%FS Below 600mm ± 0.25% FS, above 600mm ± 0.1% FS		
分辨率 Resolution ratio	模拟量信号(电压、电流)：无断解析；数字量信号(RS485)：默认12位，可选16位 Analog signal (voltage, current) : no break analysis; digital signal (RS485) : 12 bits default, optional 16 bits		
输入电阻值 Input resistance value	量程≤600mm,电阻：0-5KΩ±10%FS；量程＞600mm,电阻：0-10KΩ±10%FS Measuring range ≤600mm, resistance: 0-5KΩ±10%FS; Measuring range > 600mm, resistance: 0-10KΩ±10%FS		
测量行程 Measuring stroke	（100mm-1300mm）之间量程任意可选 （ 100mm-1300mm ）Any range can be selected between		
线径规格 Wire diameter specification	直径0.8mm的多股不锈钢钢丝SUS316L材质，外层为尼龙涂层，负荷为16kg 0.8mm diameter multi strand stainless steel wire SUS316L material, with an outer layer of nylon coating and a load of 16kg		
功率 Power	70℃时1W（行程500mm），70℃时2W（行程1000mm） 1W at 70°C(travel 500mm), 2W at 70°C(travel 1000mm)		
传感器 Sensor	1.(默认)绕线式多圈电位器； 2.(可选)光栅式多圈编码器；3.(可选)磁感应(磁电)多圈位置传感器 1.(Default) winding multi-turn potentiometer; 2.(Optional) raster multi-turn encoder; 3.(Optional) Magnetic induction (magnetoelectric) multi-turn position sensor		
可选输出信号 Optional output signal	电位计输出（DC5-10V），电流/电压/RS485信号输出（DC12-24V），脉冲信号输出（DC8-30V） Potentiometer output (DC5-10V), current/voltage/RS485 signal output (DC12-24V), pulse signal output (DC8-30V)		
工作温度 Operation temperature	-20℃~+75℃（低温状态下，需保持无结晶状态； 涂抹防冻液最低工作温度可达-35℃；脉冲输出工作温度为-10℃~65℃） -20℃~+75℃ (at low temperature, it should be kept in a non-crystalline state; The minimum working temperature of applying antifreeze can reach -35℃; Pulse output operating temperature is -10℃~65℃)		

电气指标Electrical Specifications

MPS-M拉绳位移传感器 MPS-M Rope displacement sensor			
起动转轴 Start shaft	≥600g	重量 Weight	<1000g
震动 Vibrate	10g（10±1500Hz）	储存温度 Storage temperature	-20℃~+80℃
寿命 Life	典型>1X10^{6}循环 Typical>1X10^{6}cycles	消耗电流 Consumption current	≤30mA
重复性精度 Repeatability accuracy	±0.02mm	发条/弹簧材质 Spring/spring material	进口不锈钢 Imported stainless steel
线性精度 Linear accuracy	600mm以下±0.25%FS，600mm以上±0.1%FS (Travel<2 meters) Maximum 600g; (Travel ≥ 2 meters) Maximum 900g		
输入电阻值 Enter the resistance value	0-10KΩ±10%FS		
分辨率 Resolution ratio	模拟量信号(电压、电流）：无断解析；数字量信号(RS485)：默认12位，可选16位 Analog signal (voltage, current) : no break analysis; Digital signal (RS485) : 12 bits default, optional 16 bits		
测量行程 Measuring stroke	（1000~4000）mm之间行程任意可选 Optional stroke between (1000~4000) mm		
最大拉伸速度 Maximum reciprocating speed	1000mm/秒 1000mm/second		
拉力 Pulling	（行程<2米）最大600g;（行程≥2米）最大900g (Travel<2 meters) Maximum 600g; (Travel ≥ 2 meters) Maximum 900g		
传感器 Sensor	1.(默认)绕线式多圈电位器；2.(可选)光栅式多圈编码器；3.(可选)磁感应(磁电)多圈位置传感器 1.(Default) winding multi-turn potentiometer; 2.(Optional) raster multi-turn encoder; 3.(Optional) Magnetic induction (magnetoelectric) multi-turn position sensor		
保护等级 Protection level	该产品保护等级为IP65（只限外壳） The protection level of this product is IP65 (limited to the shell only)		
线径规格 Wire diameter specification	多股不锈钢钢丝SUS316L材质，外层为尼龙涂层，直径1.5mm负荷为23kg;直径0.8mm负荷为16kg Multi strand stainless steel wire SUS316L material, with an outer layer of nylon coating, with a diameter of 1.5mm and a load of 23kg; 0.8mm diameter with a load of 16kg		
可选输出信号 Optional output signal	电位计输出（DC5-10V），电流/电压/RS485信号输出（DC12-24V），脉冲信号输出（DC8-30V） Potentiometer output (DC5-10V), current/voltage/RS485 signal output (DC12-24V), pulse signal output (DC8-30V)		
工作温度 Operation temperature	-20℃~+75℃（低温状态下，需保持无结晶状态； 涂抹防冻液最低工作温度可达-35℃；脉冲输出工作温度为-10℃~65℃） -20℃~+75℃ (at low temperature, it should be kept in a non-crystalline state; The minimum working temperature of applying antifreeze can reach -35℃; Pulse output operating temperature is -10℃~65℃)		

电气指标Electrical Specifications

型号 Model	MPS-L拉绳位移传感器 MPS-L Rope displacement sensor
重复性精度 Repeatability accuracy	±0.02mm
重量 Weight	≤3500g
拉力 Pulling	≤2200g
输入电阻值 Enter the resistance value	0-10KΩ±10%FS
线性精度 Linear accuracy	600mm以下±0.25%FS，600mm以上±0.1%FS Below 600mm ± 0.25% FS, above 600mm ± 0.1% FS
分辨率 Resolution ratio	模拟量信号(电压、电流)：无断解析；数字量信号(RS485)：默认12位；可选16位 Analog signal (voltage, current) : no break analysis; Digital signal (RS485) : 12 bits default, optional 16 bits
供应电流 Supply current	最大25mA Maximum 25mA
测量行程 Measuring stroke	（4500mm~10000mm）之间量程任意可选 Optional range between 4500mm and 10000mm
发条/弹簧材质 Spring/spring material	进口不锈钢 Imported stainless steel
最大拉伸速度 Maximum reciprocating speed	500mm/秒 500mm/second
储存温度 Storage temperature	-20℃~+80℃
震动 Vibrate	10Hz-2000Hz
保护等级 Protection level	IP65（只限外壳） IP65 (Shell only)
线径规格 Wire diameter specification	直径1.5mm的多股不锈钢钢丝SUS316L材质，外层为尼龙涂层 1.5mm diameter multi strand stainless steel wire SUS316L material with an outer layer of nylon coating
传感器 Sensor	1.(默认)绕线式多圈电位器； 2.(可选)光栅式多圈编码器；3.(可选)磁感应(磁电)多圈位置传感器 1.(Default) winding multi-turn potentiometer; 2.(Optional) raster multi-turn encoder; 3.(Optional) Magnetic induction (magnetoelectric) multi-turn position sensor
可选输出信号 Optional output signal	电位计输出（DC5-10V）， 电流/电压/RS485信号输出（DC12-24V），脉冲信号输出（DC8-30V） Potentiometer output (DC5-10V), current/voltage/RS485 signal output (DC12-24V), pulse signal output (DC8-30V)
工作温度 Operation temperature	-20℃~+75℃（低温状态下，需保持无结晶状态； 涂抹防冻液最低工作温度可达-35℃；脉冲输出工作温度为-10℃~65℃） -20℃~+75℃ (at low temperature, it should be kept in a non-crystalline state; The minimum working temperature of applying antifreeze can reach -35℃; Pulse output operating temperature is -10℃~65℃)

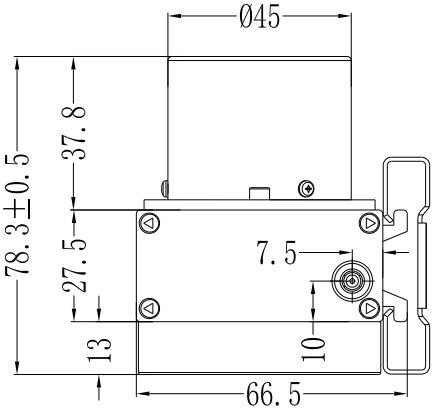
电气指标Electrical Specifications

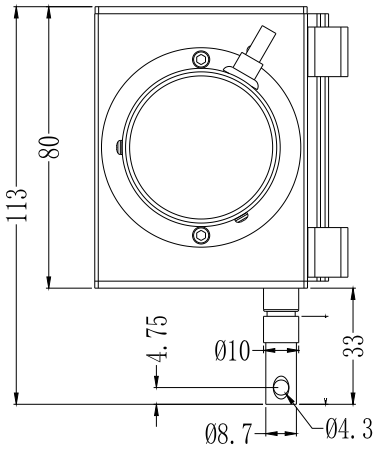
型号 Model	MPS-XL拉绳位移传感器 MPS-XL Rope displacement sensor
线性精度 Linear accuracy	600mm以下±0.25%FS，600mm以上±0.1%FS Below 600mm ± 0.25% FS, above 600mm ± 0.1% FS
重复性精度 Repeatability accuracy	±0.02mm
发条/弹簧材质 Spring/spring material	进口不锈钢 Imported stainless steel
分辨率 Resolution ratio	模拟量信号(电压、电流)：无断解析；数字量信号(RS485)：默认12位，可选16位 Analog signal (voltage, current) : no break analysis; Digital signal (RS485) : 12 bits default, optional 16 bits
储存温度 Storage temperature	-20℃~+80℃
线径规格 Wire diameter specification	直径1.5mm的多股不锈钢钢丝SUS316L材质，外层为尼龙涂层 1.5mm diameter multi strand stainless steel wire SUS316L material with an outer layer of nylon coating
震动 Vibrate	10Hz-2000Hz
保护等级 Protection level	IP65（只限外壳） IP65 (Shell only)
测量行程 Measuring stroke	(11000~35000)mm之间行程任意可选 Optional stroke between 11000-35000 mm
最大拉伸速度 Maximum reciprocating speed	500mm/秒 500mm/second
拉力 Pulling	≤2200g
输入电阻值 Input resistance value	0-10KΩ±10%FS
额定功率 Rated power	2W在70℃时 2W at 70 °C
传感器 Sensor	1.(默认)绕线式多圈电位器； 2.(可选)光栅式多圈编码器；3.(可选)磁感应(磁电)多圈位置传感器 1.(Default) winding multi-turn potentiometer; 2.(Optional) raster multi-turn encoder; 3.(Optional) Magnetic induction (magnetoelectric) multi-turn position sensor
可选输出信号 Optional output signal	电位计输出（DC5-10V）， 电流/电压/RS485信号输出（DC12-24V），脉冲信号输出（DC8-30V） Potentiometer output (DC5-10V), current/voltage/RS485 signal output (DC12-24V), pulse signal output (DC8-30V)
工作温度 Operation temperature	-20℃~+75℃（低温状态下，需保持无结晶状态； 涂抹防冻液最低工作温度可达-35℃；脉冲输出工作温度为-10℃~65℃） -20℃~+75℃ (at low temperature, it should be kept in a non-crystalline state; The minimum working temperature of applying antifreeze can reach -35℃; Pulse output operating temperature is -10℃~65℃)

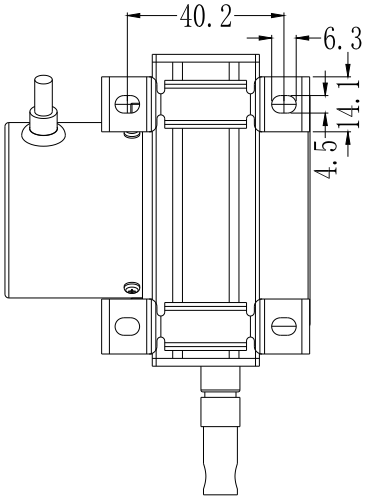
产品尺寸图Product Dimension Diagram

MPS-S

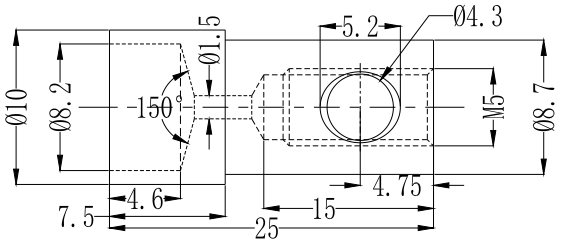
支架安装式 Bracket mounted
可选量程 Optional range:100-1300mm



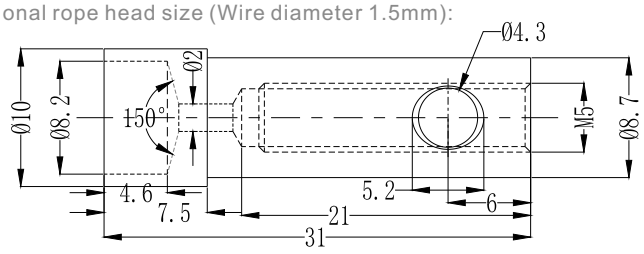




默认拉绳头尺寸（线径0.8mm）：
Default rope head size(Wire diameter 0.8mm):



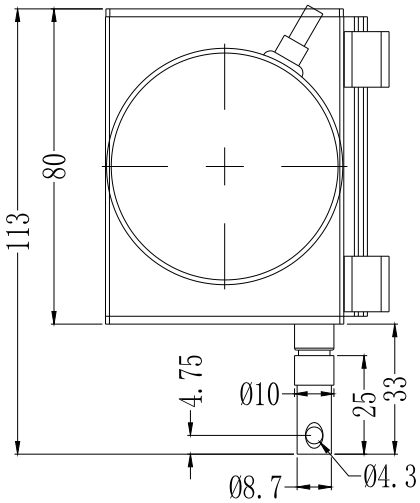
可选拉绳头尺寸（线径1.5mm）：
Optional rope head size (Wire diameter 1.5mm):

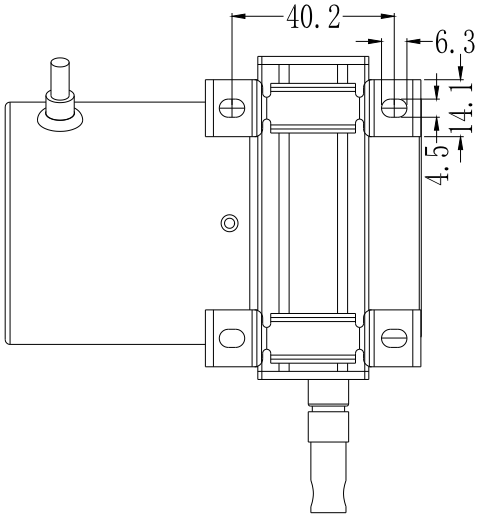


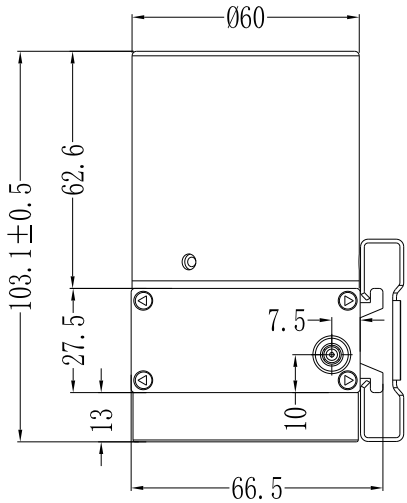
产品尺寸图Product Dimension Diagram

MPS-S-P

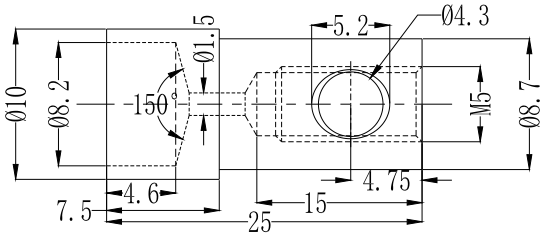
支架安装式（脉冲信号输出） Bracket mounted (pulse output)
可选量程 Optional range:100-1300mm



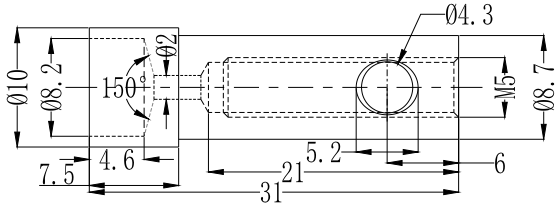




默认拉绳头尺寸（线径0.8mm）：
Default rope head size(Wire diameter 0.8mm):

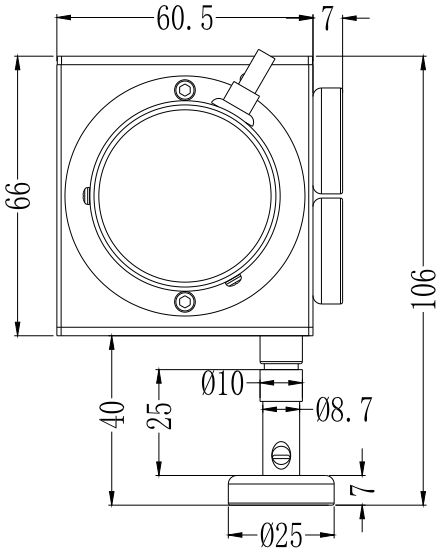


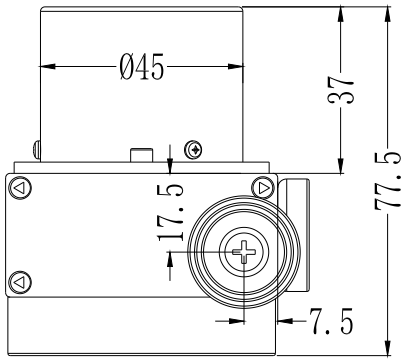
可选拉绳头尺寸（线径1.5mm）：
Optional rope head size (Wire diameter 1.5mm):

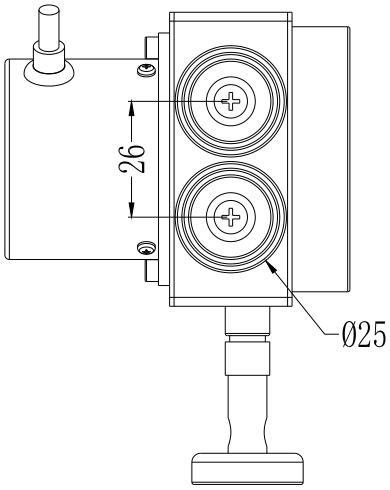


MPS-S

磁吸安装式 Magnetic mounting type
可选量程 Optional range:100-1300mm

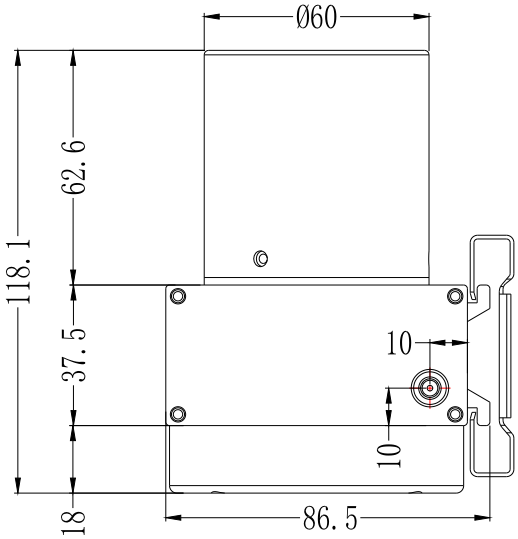


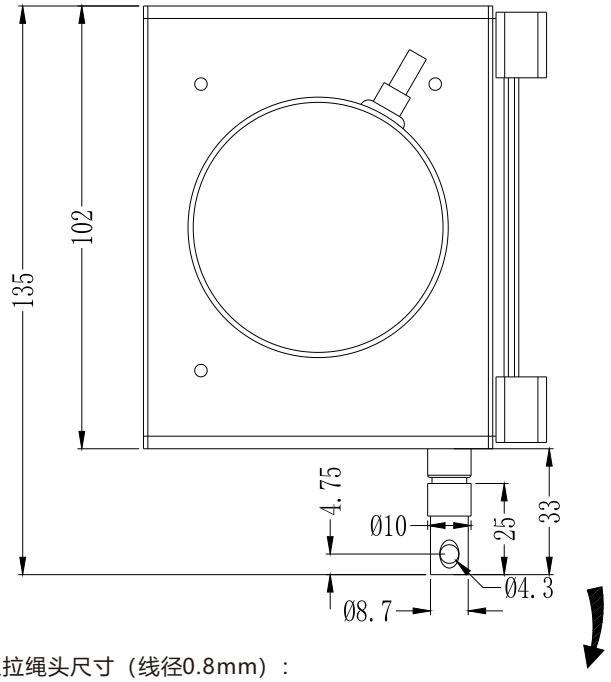


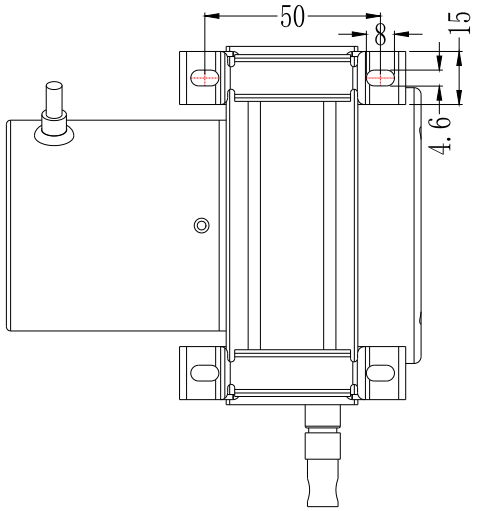


MPS-M

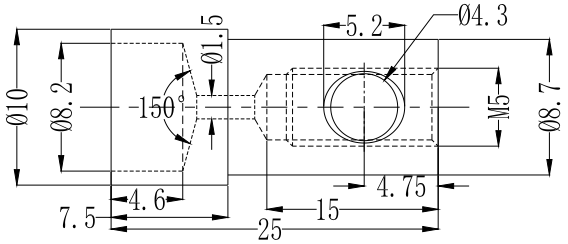
支架安装式 Bracket mounted
可选量程 Optional range:1000-4000mm



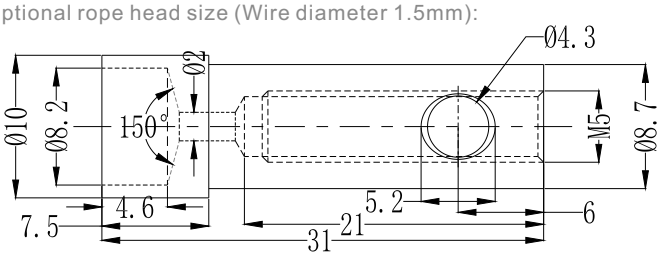




默认拉绳头尺寸（线径0.8mm）：
Default rope head size(Wire diameter 0.8mm):

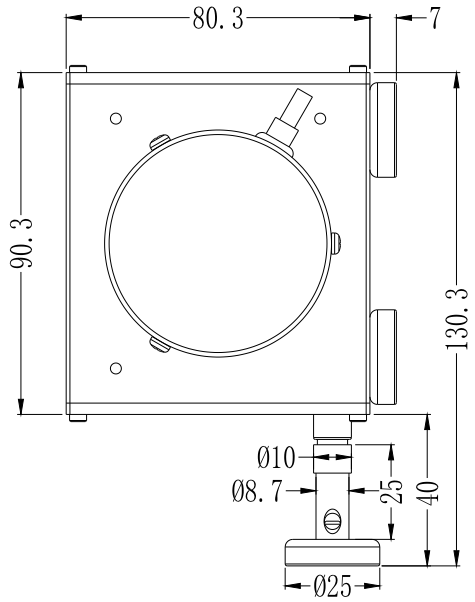


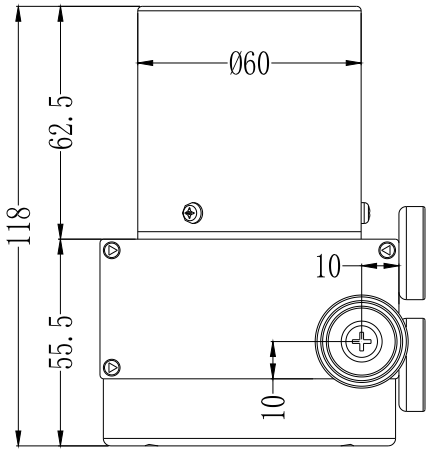
可选拉绳头尺寸（线径1.5mm）：
Optional rope head size (Wire diameter 1.5mm):

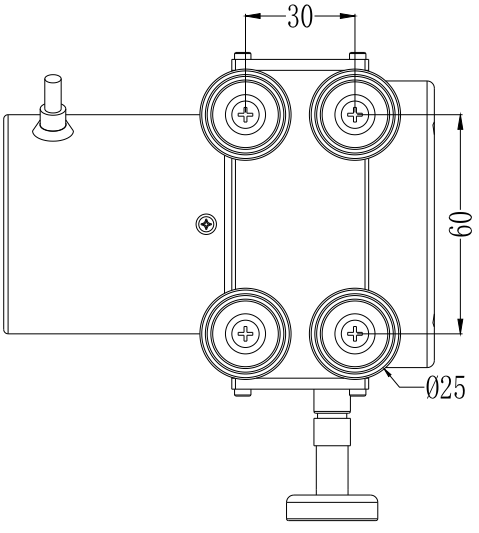


MPS-M

磁吸安装式 Magnetic mounting type
可选量程 Optional range:1000-4000mm

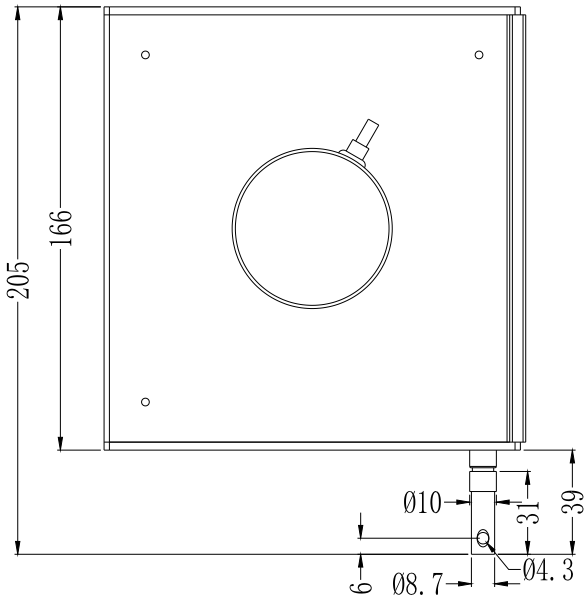


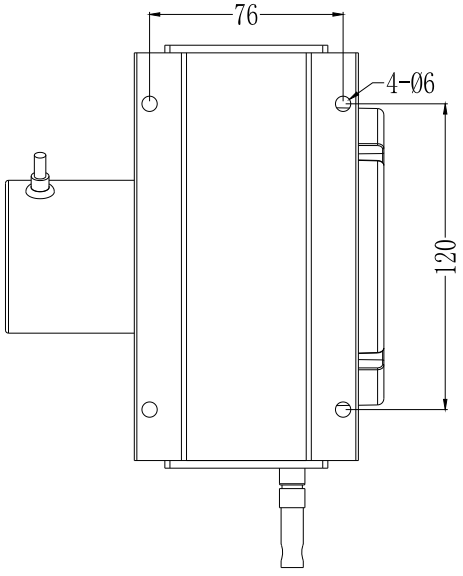


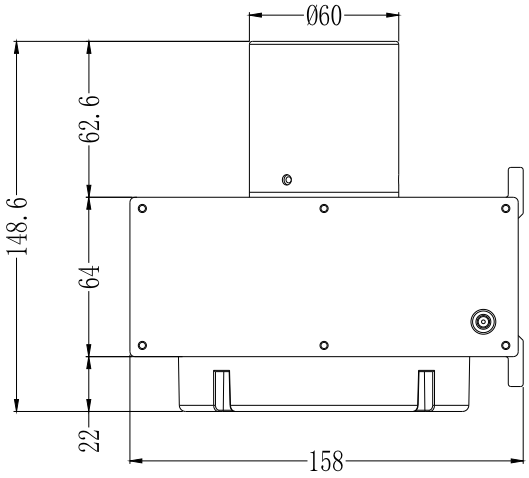


MPS-L

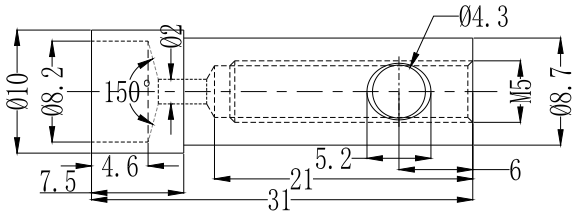
支架安装式 Bracket mounted
可选量程 Optional range:4500-10000mm







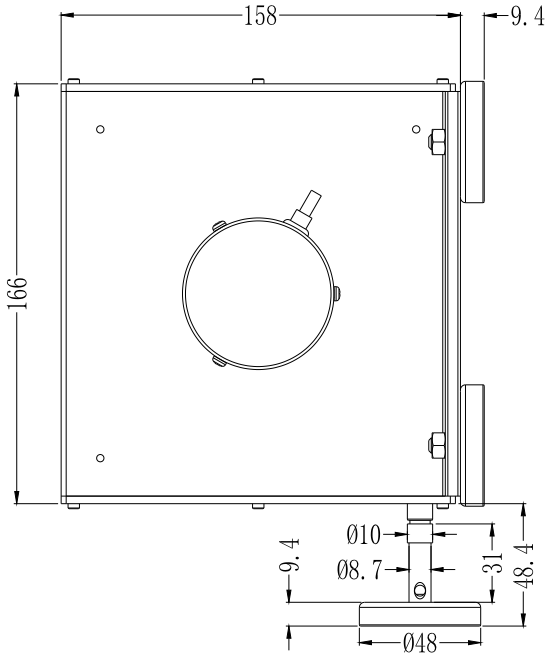
默认拉绳头尺寸（线径1.5mm）：
Default rope head size (Wire diameter 1.5mm):

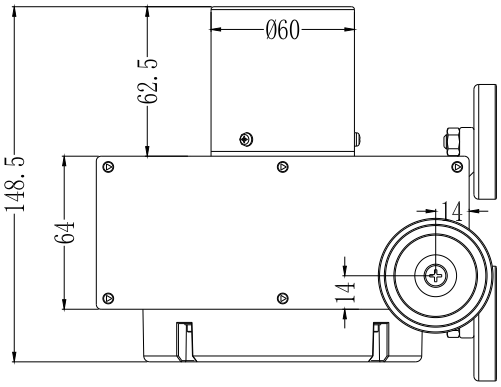


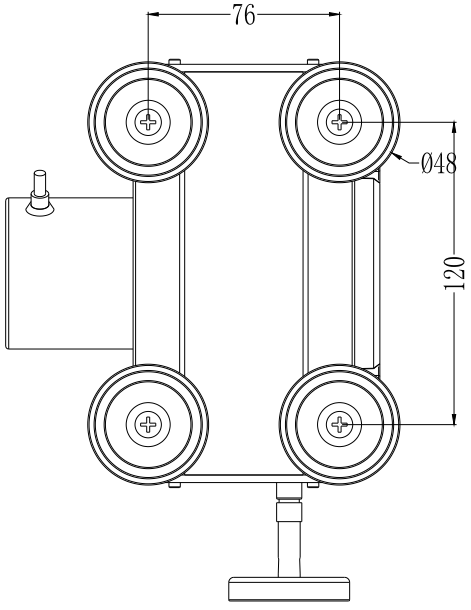
MPS-L

磁吸安装式 Magnetic mounting type

可选量程 Optional range:4500-10000mm

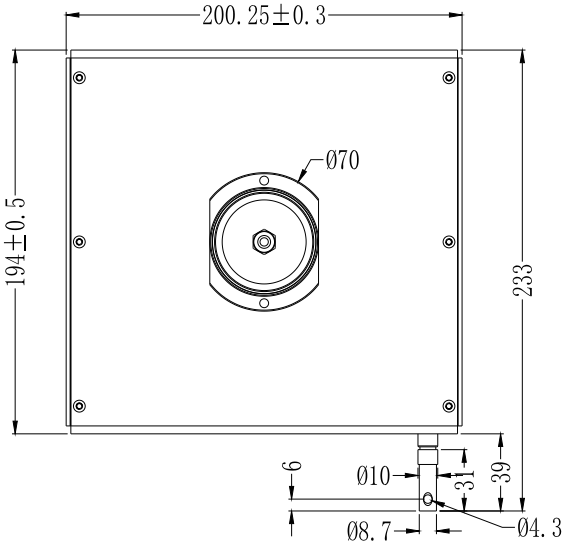


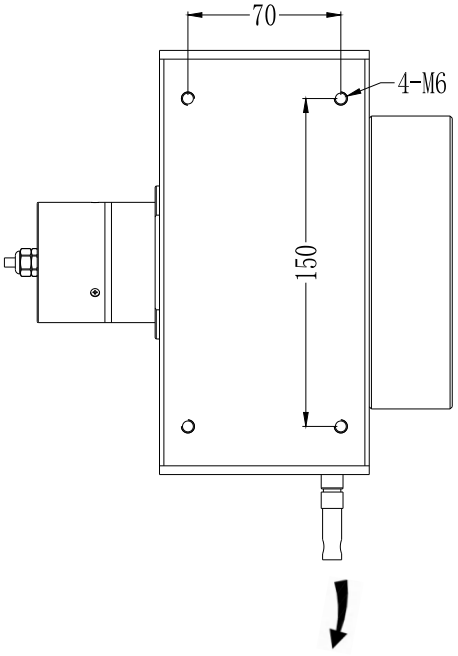


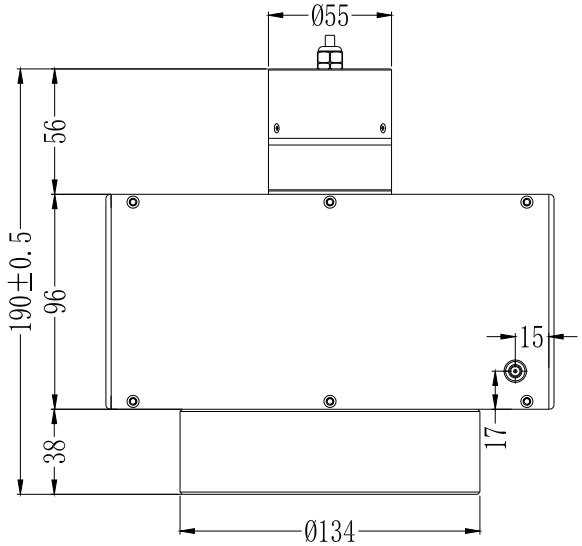


MPS-XL

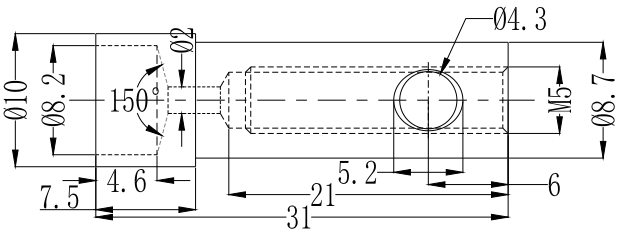
支架安装式 Bracket mounted
可选量程 Optional range:11000-18000mm





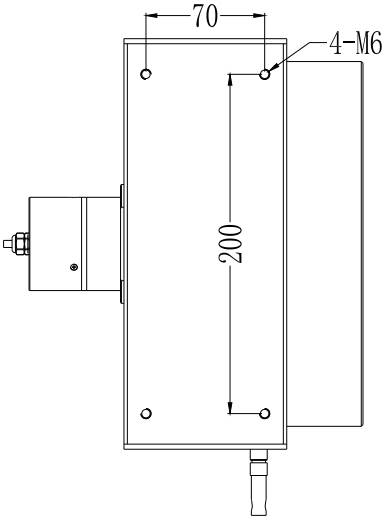


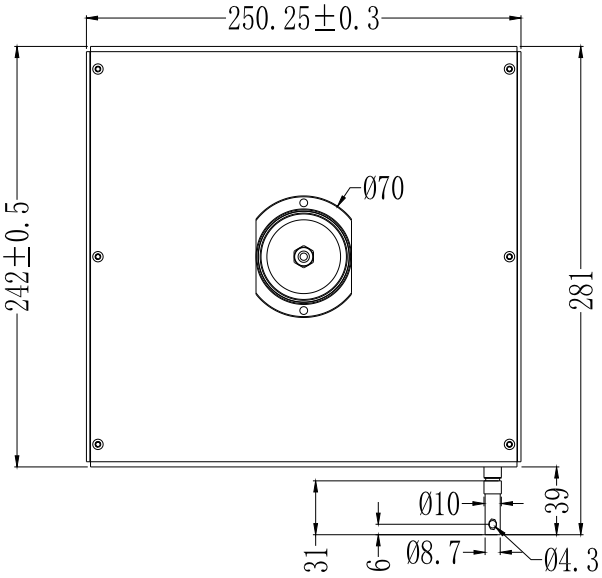
默认拉绳头尺寸（线径1.5mm）：
Default rope head size (Wire diameter 1.5mm):

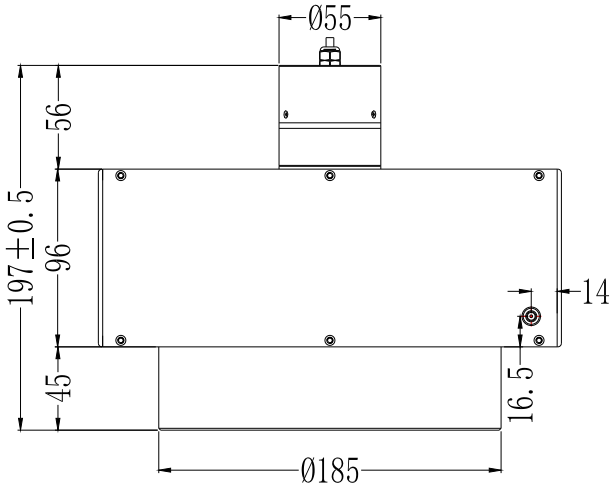


MPS-XL

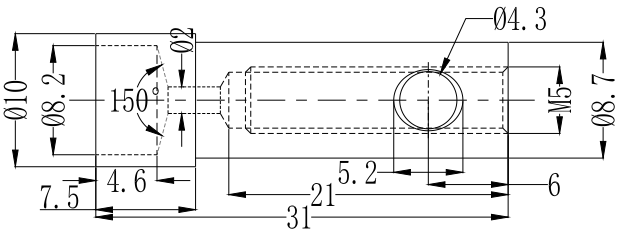
支架安装式 Bracket mounted
可选量程 Optional range:19000-28000mm





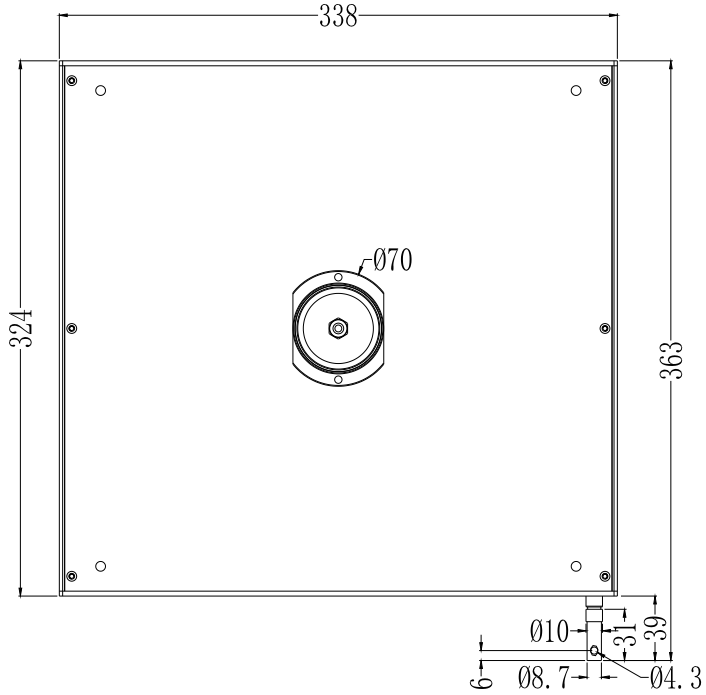


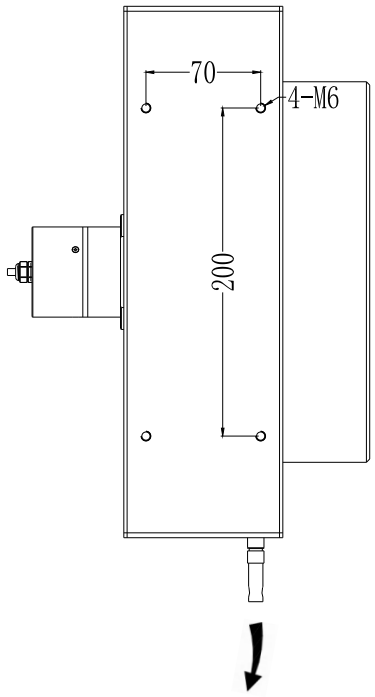
默认拉绳头尺寸（线径1.5mm）：
Default rope head size (Wire diameter 1.5mm):

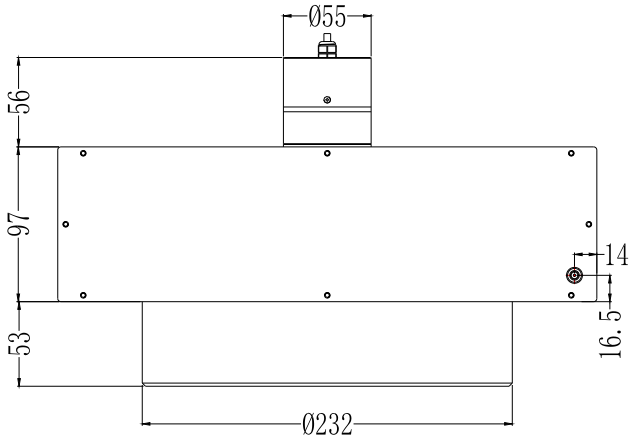


MPS-XL

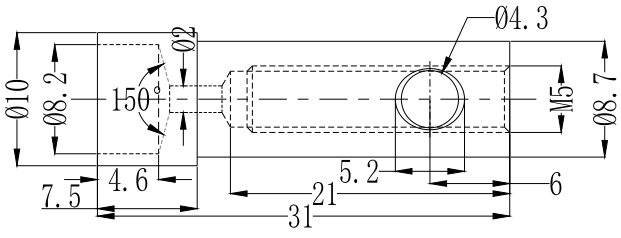
支架安装式 Bracket mounted
可选量程 Optional range:29000-35000mm







默认拉绳头尺寸（线径1.5mm）：
Default rope head size (Wire diameter 1.5mm):



MBA-MPS系列本安防爆拉绳位移传感器

MBA-MPS Series Intrinsic Safety Explosion-Proof Cable Displacement Sensor

检测证书 Testing Certificate

编号：CNEx20.6245X

CNEX 国家防爆

防爆合格证

制造单位	深圳市米朗科技有限公司 (深圳市光明区公明街道上村社区红满庭红木文化创意园 A 栋 501)
产品名称	拉绳位移传感器
型号规格	MBA-MPS-mA　24VDC
防爆标志	Ex ia IIB T6 Ga
产品标准	Q/MLKJ02-2020
总装图号	MBA-MPS.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：
GB3836.1-2010《爆炸性环境　第 1 部分：设备 通用要求》
GB3836.4-2010《爆炸性环境　第 4 部分：由本质安全型“i”保护的设备》
GB3836.20-2010《爆炸性环境　第 20 部分：设备保护级别（EPL）为 Ga 的设备》

记事:
1、本产品用在 0 区时，应采取措施防止由于冲击或摩擦引起的点燃危险!
2、本安参数
电源端、4～20mA 端均为：Ui= 28VDC，Ii=93mA，Pi=0.65W，Ci=0.04μF，Li=0mH。
3、产品使用的环境温度-20℃～+60℃。

中心主任

颁发日期　2020 年 12 月 18 日

本证有效期　2020 年 12 月 18 日至 2025 年 12 月 17 日

Ex CQST 国家防爆电气产品质量监督检验中心 南阳防爆电气研究所

地址：中国河南省南阳市仲景北路20号
邮政编码：473008
电话：0377-63258564
传真：0377-63208175
网址：www.china-ex.com

公众号

注：本证书仅对与认可文件和样品一致的产品有效。登录网站或关注公众号查询真伪 5845 0024 0884 5159 查询方式：www.china-ex.com

MBA-MPS系列为本安防爆型拉绳位移传感器，MBA-MPS系列安装尺寸及性能参数跟MPS系列相同，内部核心部件为高精度、长寿命多圈电位计，并获得本安防爆证书，防爆标志为Ex ia IIB T6 Ga，限电流二线制和RS485两种信号输出。

The MBA-MPS series is an intrinsically safe explosion-proof rope displacement sensor. The installation dimensions and performance parameters of the MBA-MPS series are the same as those of the MPS series. The internal core component is a high-precision, long-life multi turn potentiometer, and it has obtained an intrinsically safe explosion-proof certificate. The explosion-proof mark is Ex ia IIB T6 Ga, and there are two types of signal outputs: limited current two wire system and Rs485.

检测证书 Testing Certificate

编号：CNEx20.6246X

CNEX 国家防爆

防爆合格证

制造单位	深圳市米朗科技有限公司 (深圳市光明区公明街道上村社区红满庭红木文化创意园 A 栋 501)
产品名称	拉绳位移传感器
型号规格	MBA-MPS-RS485　　24VDC
防爆标志	Ex ia IIB T6 Ga
产品标准	Q/MLKJ02-2020
总装图号	MBA-MPS.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：
GB3836.1-2010《爆炸性环境　第 1 部分：设备 通用要求》
GB3836.4-2010《爆炸性环境　第 4 部分：由本质安全型 "i" 保护的设备》
GB3836.20-2010《爆炸性环境　第 20 部分：设备保护级别（EPL）为 Ga 的设备》

记事:
1、本产品用在 0 区时，应采取措施防止由于冲击或摩擦引起的点燃危险!
2、本安参数
电源端：Ui= 28VDC，Ii=93mA，Pi=0.65W，Ci=0.02μF，Li=0mH。
RS485A-地，RS485B-地：Ui= 10.5VDC，Ii=100mA，Pi=0.26W，Ci=12μF，Li=0mH。
3、产品使用的环境温度-20℃~+60℃。

中心主任

颁发日期　2020 年 12 月 18 日

本证有效期　2020 年 12 月 18 日至 2025 年 12 月 17 日

Ex CQST 国家防爆电气产品质量监督检验中心 南阳防爆电气研究所

地址：中国河南省南阳市仲景北路20号
邮政编码：473008
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公众号

注：本证书仅对与认可文件和样品一致的产品有效。登录网站或关注公众号查询真伪　6788 2087 8173 6387　查询方式：www.china-ex.com

MBA-MPS系列为本安防爆型拉绳位移传感器，MBA-MPS系列安装尺寸及性能参数跟MPS系列相同，内部核心部件为高精度、长寿命多圈电位计，并获得本安防爆证书，防爆标志为Ex ia IIB T6 Ga，限电流二线制和RS485两种信号输出。

The MBA-MPS series is an intrinsically safe explosion-proof rope displacement sensor. The installation dimensions and performance parameters of the MBA-MPS series are the same as those of the MPS series. The internal core component is a high-precision, long-life multi turn potentiometer, and it has obtained an intrinsically safe explosion-proof certificate. The explosion-proof mark is Ex ia IIB T6 Ga, and there are two types of signal outputs: limited current two wire system and Rs485.

SM系列拉绳位移传感器

SM Series Rope Displacement Sensor

产品实物图 Product Physical Pictures

SM-S



SM-M



产品概述 Overview

SM-S/M系列拉线位移传感器，又称拉绳编码器，拉绳尺，拉线尺，拉线编码器，拉绳位移传感器，是直线位移传感器在结构上的精巧集成，充分结合了角度传感器和直线位移传感器的优点，成为一款结构紧凑、测量行程长、安装空间尺寸小、具有高精度测量的优良传感器。SM-S/M系列拉线位移传感器具有很大的选择空间，行程从100mm至2000mm不等，具有模拟电流信号A2：4-20mA电流输出二线制，电流信号A3：4-20mA电流输出三线制，电流信号A4：4-20mA电流输出四线制；模拟电压信号V1：0-5V，V2：0-10V，脉冲信号P：A、B、Z相数字输出，数字信号RS485。满足大行程、高精度各种信号需求。可应用于裂缝测量监测，桥梁测量监测，仓储位置定位，水库大坝保护，闸门开度控制，压力机械等方面。

The SM-S/M series cable displacement sensor, also known as the cable encoder, cable ruler, cable ruler, cable encoder, and cable displacement sensor, is a sophisticated integration of linear displacement sensors in structure, fully combining the advantages of angle sensors and linear displacement sensors. It has become an excellent sensor with compact structure, long measurement stroke, small installation space size, and high-precision measurement. The SM-S/M series cable displacement sensor has a large selection space, with travel ranging from 100mm to 2000mm. It has a two wire system for analog current signal A2: 4-20mA current output, a three wire system for current signal A3: 4-20mA current output, and a four wire system for current signal A4: 4-20mA current output; Simulated voltage signals V1: 0-5V, V2: 0-10V, pulse signals P: A, B, Z-phase digital output, digital signal RS485. Meet various signal requirements for long travel and high precision. It can be applied to crack measurement and monitoring, bridge measurement and monitoring, warehouse location positioning, reservoir dam protection, gate opening control, pressure machinery and other aspects.

性能参数 Performance Parameter

电气指标Electrical Specifications

型号 Model	SM-S/SM-M拉绳位移传感器 SM-S/SM-M Rope displacement sensor
重复性精度 Repeatability accuracy	±0.02mm
震动 Vibrate	10Hz~2000Hz
储存温度 Storage temperature	-20℃~+80℃
线性精度 Linear accuracy	600mm以下±0.25%FS，600mm以上±0.1%FS Below 600mm ± 0.25% FS, above 600mm ± 0.1% FS
保护等级 Protection level	IP65(只限外壳) IP65 (Shell only)
分辨率 Resolution ratio	模拟量信号(电压、电流)：无断解析；数字量信号(RS485)：默认12位，可选16位 Analog signal (voltage, current) : no break analysis; Digital signal (RS485) : 12 bits default, optional 16 bits
输入电阻值 Input Resistance value	量程≤600mm,电阻：0-5KΩ±10%FS；量程＞600mm,电阻：0-10KΩ±10%FS Measuring range ≤600mm, resistance: 0-5KΩ±10%FS; Measuring range > 600mm, resistance: 0-10KΩ±10%FS
发条/弹簧材质 Spring/spring material	进口不锈钢 Imported stainless steel
功率 Power	70℃时1W(行程500mm),70℃时2W(行程1000mm) 1W at 70 °C (travel 500mm), 2W at 70 °C (travel 1000mm)
可选输出信号 Optional output signal	电位计输出(DC5-10V)，电流/电压/RS485信号输出(DC12-24V)，脉冲信号输出(DC8-30V) Potentiometer output(DC5-10V),current/voltage/RS485 signal output(DC12-24V),pulse signal output (DC8-30V)
传感器 Sensor	1.(默认)绕线式多圈电位器； 2.(可选)光栅式多圈编码器；3.(可选)磁感应(磁电)多圈位置传感器 1.(Default) winding multi-turn potentiometer; 2.(Optional) raster multi-turn encoder; 3.(Optional) Magnetic induction (magnetoelectric) multi-turn position sensor
工作温度 Operation temperature	-20℃~+75℃（低温状态下，需保持无结晶状态； 涂抹防冻液最低工作温度可达-35℃；脉冲输出工作温度为-10℃~65℃） -20℃~+75℃ (at low temperature, it should be kept in a non-crystalline state; The minimum working temperature of applying antifreeze can reach -35℃; Pulse output operating temperature is -10℃~65℃)

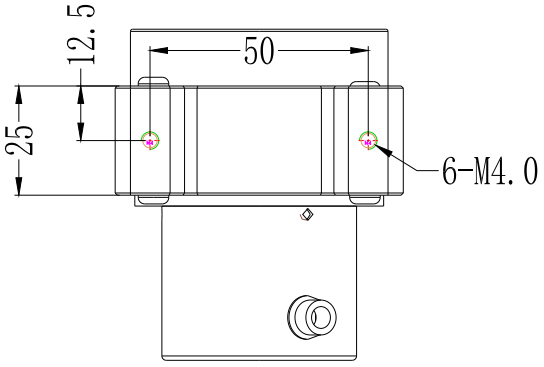
性能指标Performance Index

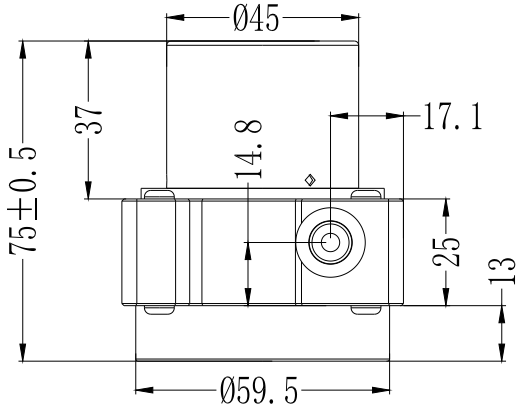
型号 Model	SM-S拉绳位移传感器(100mm-1000mm量程) SM-SRope displacement sensor(100mm-1000mm range)	SM-M拉绳位移传感器(1000mm-2000mm量程) SM-M Rope displacement sensor(1000mm-2000mm range)
重量 Weight	≤600g	≤1000g
拉力 Pulling	≤600g	(行程0-1250mm)600g；(行程超过1500）最大1000g (Travel 0-1250mm) 600g;(Travel over 1500)Maximum 1000g
线径规格 Wire diameter specification	直径0.8mm的多股不锈钢钢丝SUS316L材质， 外层为尼龙涂层,负载16kg Multi strand stainless steel wire SUS316L with a diameter of 0.8mm, The outer layer is coated with nylon, with a load of 16kg	直径0.8mm的多股不锈钢钢丝SUS316L材质， 外层为尼龙涂层 SUS316L material with multiple strands of stainless steel wire with a diameter of 0.8mm, The outer layer is coated with nylon
最大拉伸速度 Maximum reciprocating speed	1000mm/秒 1000mm/second	1000mm/秒 1000mm/second

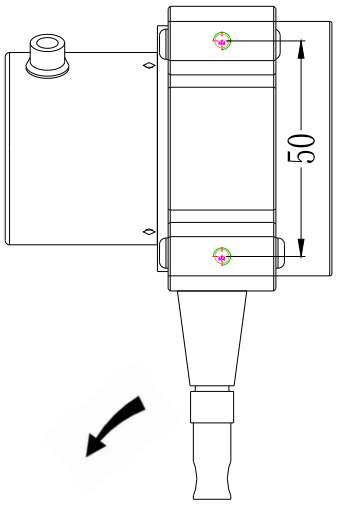
产品尺寸图 Product Dimension Diagram

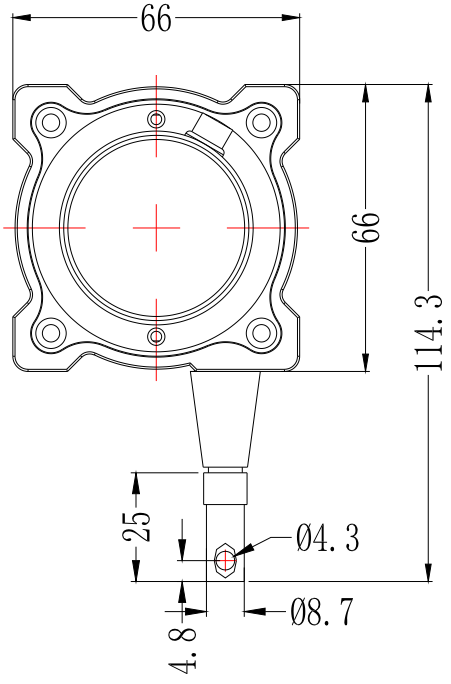
SM-S

可选量程 Optional range:100-1000mm



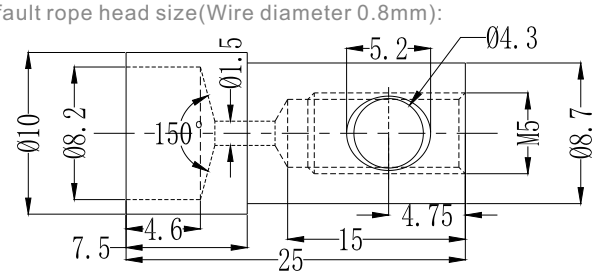






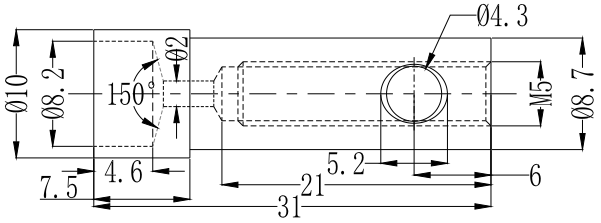
默认拉绳头尺寸（线径0.8mm）：

Default rope head size(Wire diameter 0.8mm):



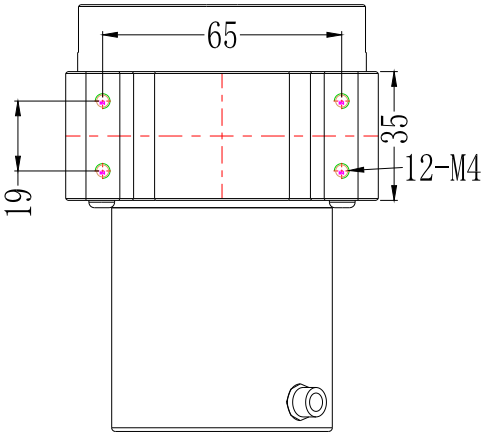
可选拉绳头尺寸（线径1.5mm）：

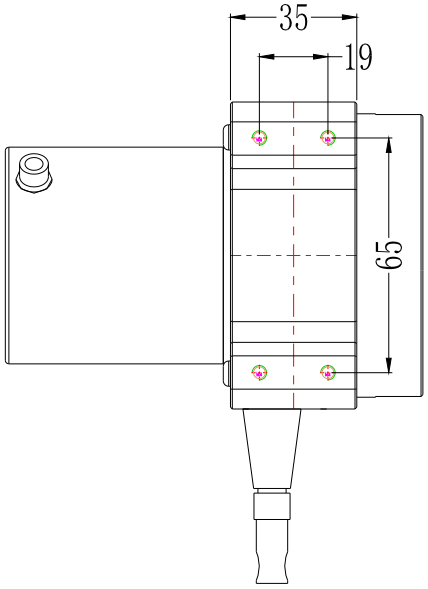
Optional rope head size (Wire diameter 1.5mm):

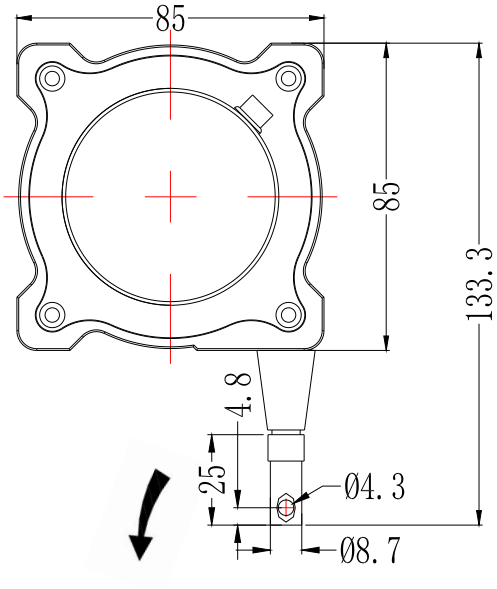


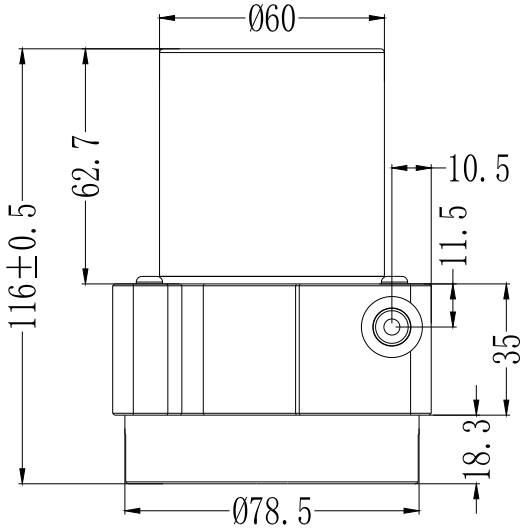
SM-M

可选量程 Optional range:1000-2000mm



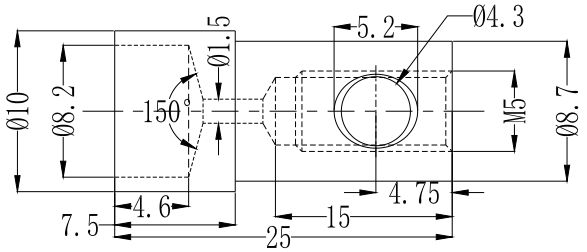






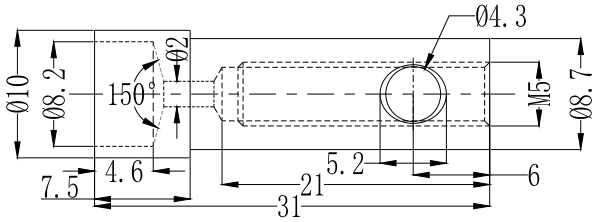
默认拉绳头尺寸（线径0.8mm）：

Default rope head size(Wire diameter 0.8mm):



可选拉绳头尺寸（线径1.5mm）：

Optional rope head size (Wire diameter 1.5mm):



WEP系列拉绳位移传感器
WEP Series Rope Displacement Sensor

产品实物图 Physical products pictures

WEP-S
侧面拉出（默认） Pull out the side end(Default)



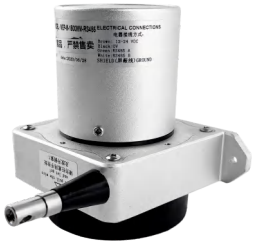
WEP-S
顶端拉出（可选） Top pull out(Optional)



WEP-M
侧面拉出（默认） Pull out the side end(Default)



WEP-M
顶端拉出（可选） Top pull out(Optional)



产品概述 Overview

WEP-S/M系列拉线位移传感器，又称拉绳编码器，拉绳尺，拉线尺，拉线编码器，拉绳位移传感器，是直线位移传感器在结构上的精巧集成，充分结合了角度传感器和直线位移传感器的优点，成为一款结构紧凑、测量行程长、安装空间尺寸小、具有高精度测量的优良传感器。WEP-S/M系列拉线位移传感器系列产品具有很大的选择空间，行程从100mm至2000mm不等，具有模拟电流信号A2：4-20mA电流输出二线制，电流信号A3：4-20mA电流输出三线制，电流信号A4：4-20mA电流输出四线制；模拟电压信号V1：0-5V，V2：0-10V，脉冲信号P：A、B、Z相数字输出，RS485数字信号输出。满足大行程、高精度各种信号需求。可应用于裂缝测量监测，桥梁测量监测，仓储位置定位，水库大坝保护，闸门开度控制，压力机械等方面。

The WEP-S/M series cable displacement sensor, also known as cable encoder, cable ruler, cable ruler, cable encoder, and cable displacement sensor, is a sophisticated integration of linear displacement sensors in structure, fully combining the advantages of angle sensors and linear displacement sensors. It has become an excellent sensor with compact structure, long measurement stroke, small installation space size, and high-precision measurement. The WEP-S/M series cable displacement sensor series products have a large selection space, with travel ranging from 100mm to 2000mm. It has a two wire system for analog current signal A2: 4-20mA current output, a three wire system for current signal A3: 4-20mA current output, and a four wire system for current signal A4: 4-20mA current output; Simulated voltage signals V1: 0-5V, V2: 0-10V, pulse signals P: A, B, Z-phase digital output, RS485 digital signal output. Meet various signal requirements for long travel and high precision. It can be applied to crack measurement and monitoring, bridge measurement and monitoring, warehouse location positioning, reservoir dam protection, gate opening control, pressure machinery and other aspects.

性能参数 Performance Parameter

性能指标Performance Index

型号 Model	WEP-S拉绳位移传感器（100mm-1000mm量程） WEP-S Rope displacement sensor (100mm-1000mm range)
重量 Weight	≤600g
拉力 Pulling	< 600g
线径规格 Wire diameter specification	直径0.8mm的多股不锈钢钢丝SUS316L材质，外层为尼龙涂层,负载16kg 0.8mm diameter multi strand stainless steel wire SUS316L material, with an outer layer of nylon coating and a load of 16kg
最大拉伸速度 Maximum reciprocating speed	1000mm/秒 1000mm/second
发条/弹簧材质 Spring/spring material	进口不锈钢 Imported stainless steel

型号 Model	WEP-M拉绳位移传感器（1000mm-2000mm量程） WEP-M Rope displacement sensor (1000mm-200mm range)
发条/弹簧材质 Spring/spring material	进口不锈钢 Imported stainless steel
重量 Weight	≤1000g
拉力 Pulling	(行程0-1250mm)600g;(行程超过1500)最大1000g (Travel 0-1250mm) 600g; (Travel over 1500) Maximum 1000g
线径规格 Wire diameter specification	直径0.8mm的多股不锈钢钢丝SUS316L材质，外层为尼龙涂层 SUS316L multi stranded stainless steel wire with a diameter of 0.8mm, with an outer layer of nylon coating
最大拉伸速度 Maximum reciprocating speed	1000mm/秒 1000mm/second

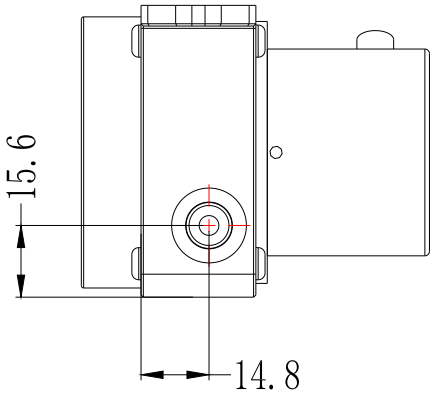
电气指标Electrical Specifications

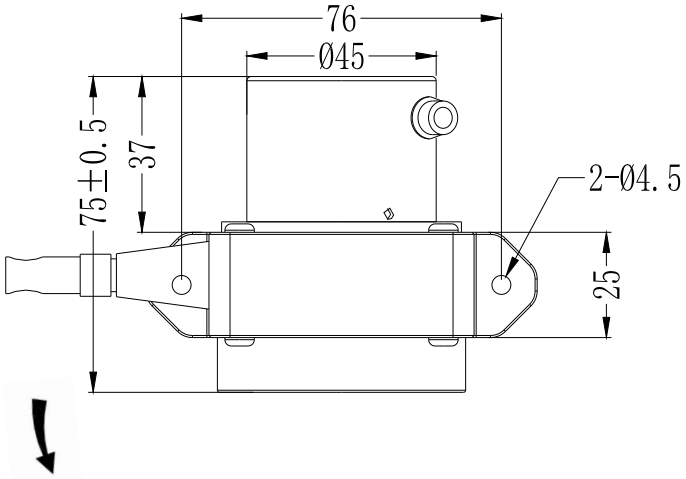
型号 Model	WEP-S/WEP-M拉绳位移传感器 WEP-S/WEP-M Rope displacement sensor
线性精度 Linear accuracy	600mm以下±0.25%FS，600mm以上±0.1%FS Below 600mm ± 0.25% FS, above 600mm ± 0.1% FS
震动 Vibrate	10Hz~2000Hz
保护等级 Protection level	IP65(只限外壳) IP65 (Shell only)
重复性精度 Repeatability accuracy	±0.02mm
功率 Power	70℃时1W(行程500mm),70℃时2W(行程1000mm) 1W at 70°C (travel 500mm), 2W at 70°C (travel 1000mm)
储存温度 Storage temperature	-20℃~+80℃
输入电阻值 Input Resistance value	量程≤600mm,电阻：0-5KΩ±10%FS；量程＞600mm,电阻：0-10KΩ±10%FS Measuring range ≤600mm, resistance: 0-5KΩ±10%FS; Measuring range > 600mm, resistance: 0-10KΩ±10%FS
分辨率 Resolution ratio	模拟量信号(电压、电流)：无断解析；数字量信号(RS485)：默认12位，可选16位 Analog signal (voltage, current) : no break analysis; Digital signal (RS485) : 12 bits default, optional 16 bits
传感器 Sensor	1.(默认)绕线式多圈电位器；2.(可选)光栅式多圈编码器； 3.(可选)磁感应(磁电)多圈位置传感器 1.(Default) winding multi-turn potentiometer; 2.(Optional) raster multi-turn encoder; 3.(Optional) Magnetic induction (magnetoelectric) multi-turn position sensor
可选输出信号 Optional output signal	电位计输出(DC5-10V)，电流/电压/RS485信号输出(DC12-24V)，脉冲信号输出(DC8-30V) Potentiometer output (DC5-10V), current/voltage/RS485 signal output (DC12-24V), pulse signal output (DC8-30V)
工作温度 Operation temperature	-20℃~+75℃（低温状态下，需保持无结晶状态； 涂抹防冻液最低工作温度可达-35℃；脉冲输出工作温度为-10℃~65℃） -20℃~+75℃ (at low temperature, it should be kept in a non-crystalline state; The minimum working temperature of applying antifreeze can reach -35℃; Pulse output operating temperature is -10℃~65℃)

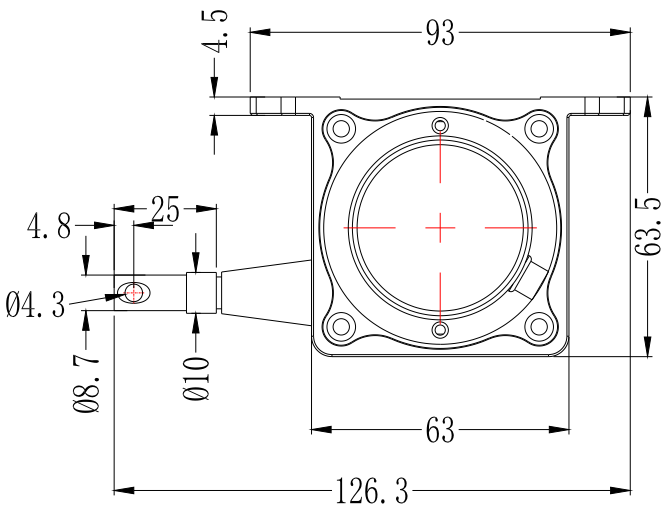
产品尺寸图 Product Dimension Diagram

WEP-S

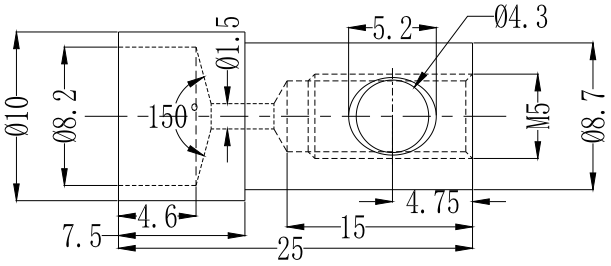
侧面拉出（默认） Pull out the side end(Default)
可选量程 Optional range:100-1000mm



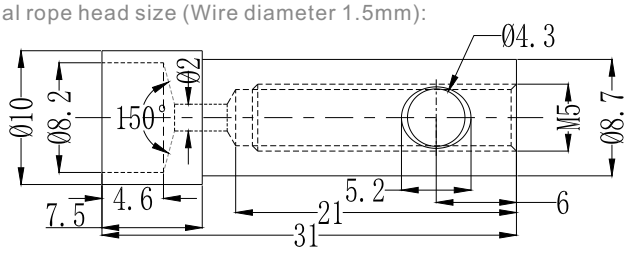




默认拉绳头尺寸（线径0.8mm）：
Default rope head size(Wire diameter 0.8mm):

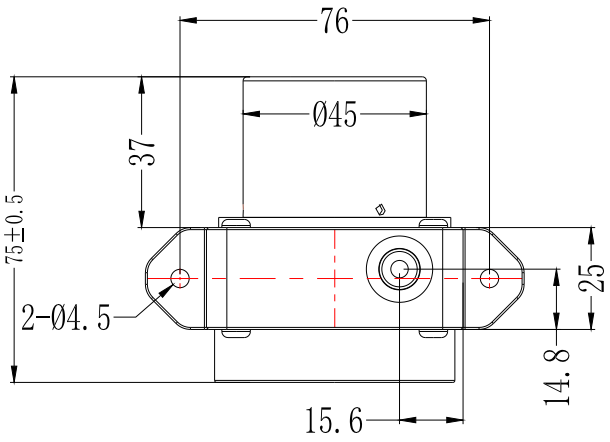


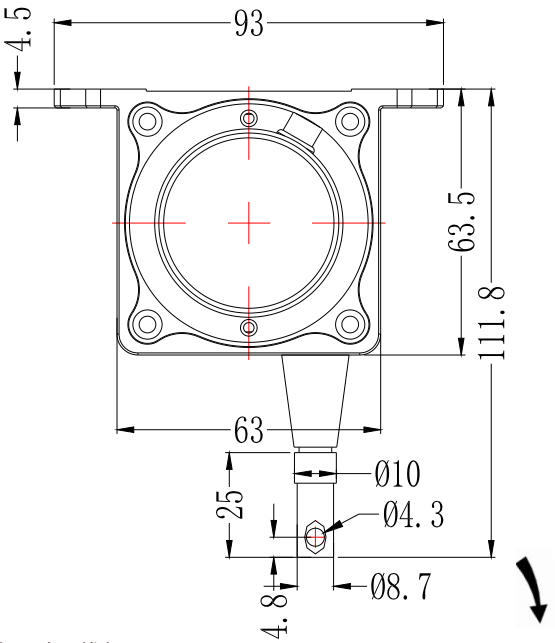
可选拉绳头尺寸（线径1.5mm）：
Optional rope head size (Wire diameter 1.5mm):



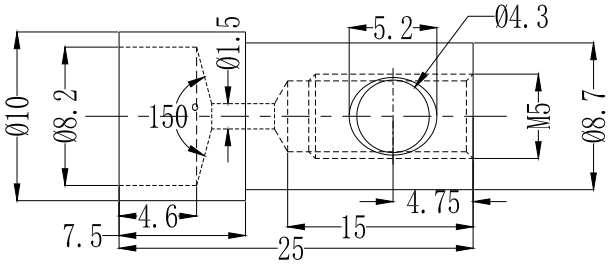
WEP-S

顶端拉出（可选） Top pull out(Optional)
可选量程 Optional range:100-1000mm

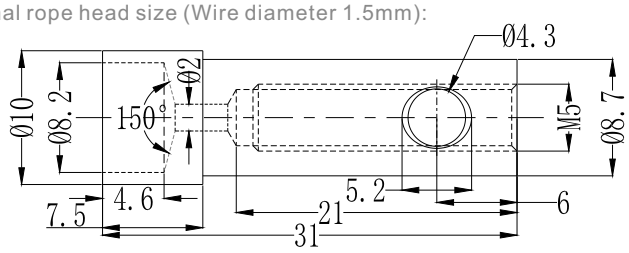




默认拉绳头尺寸（线径0.8mm）：
Default rope head size(Wire diameter 0.8mm):

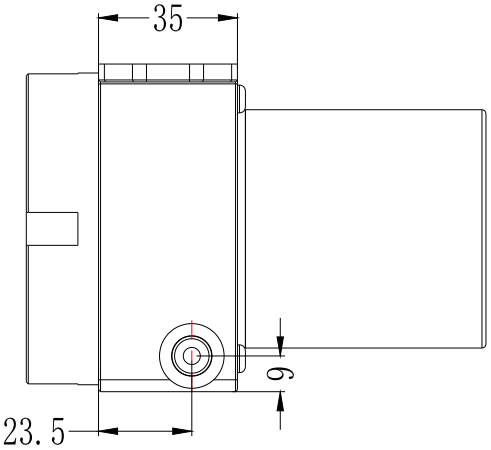


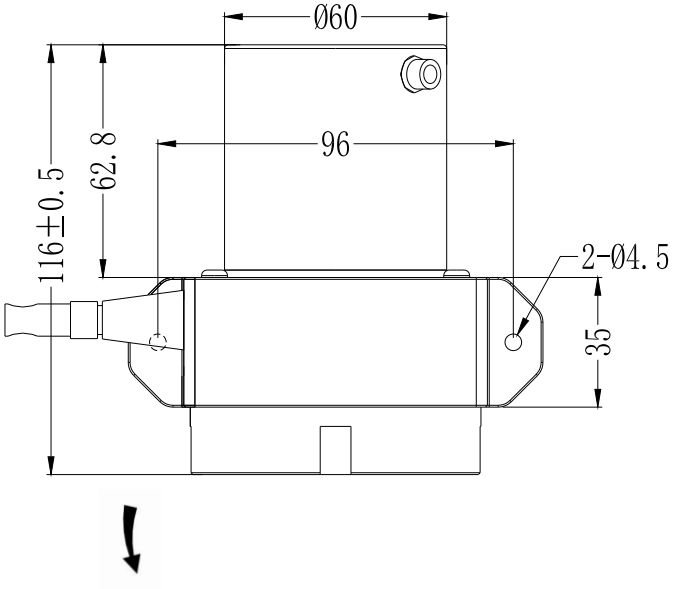
可选拉绳头尺寸（线径1.5mm）：
Optional rope head size (Wire diameter 1.5mm):

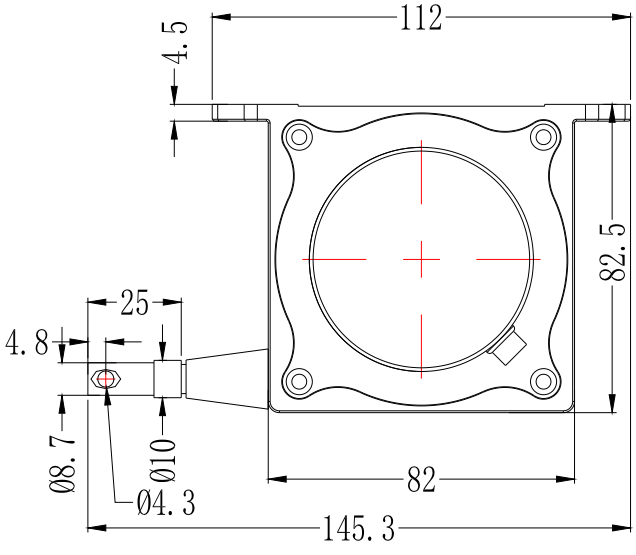


WEP-M

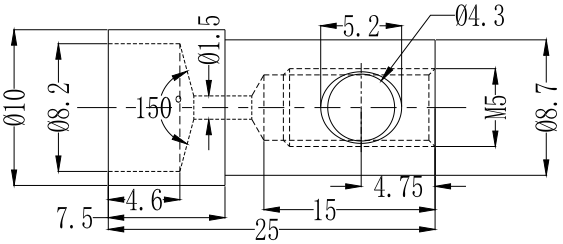
侧面拉出（默认） Pull out the side end(Default)
可选量程 Optional range:100-1000mm



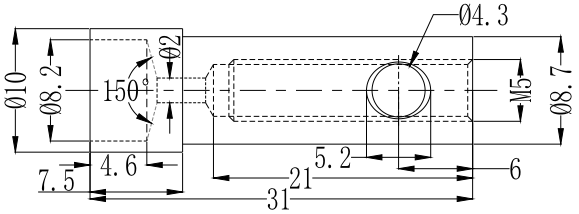




默认拉绳头尺寸（线径0.8mm）：
Default rope head size(Wire diameter 0.8mm):

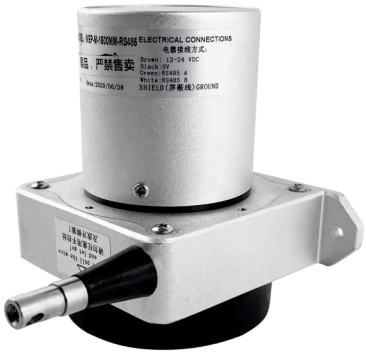


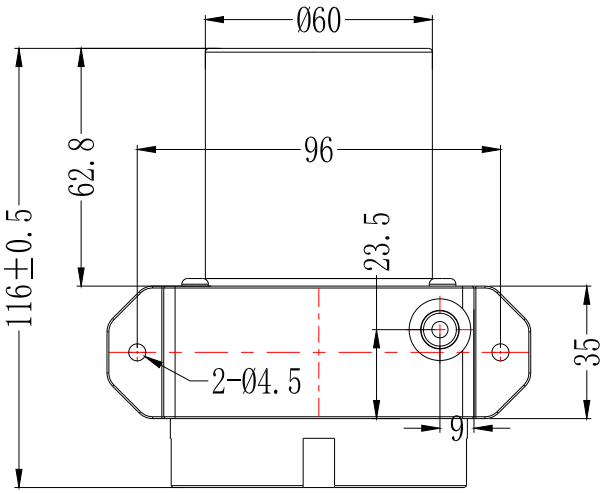
可选拉绳头尺寸（线径1.5mm）：
Optional rope head size (Wire diameter 1.5mm):

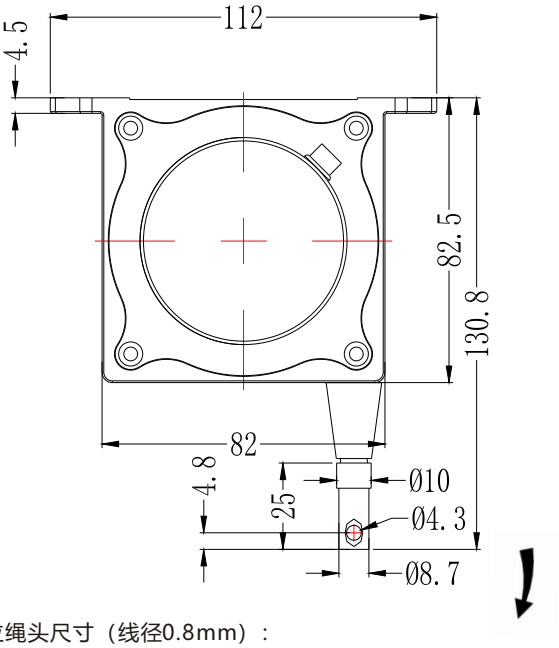


WEP-M

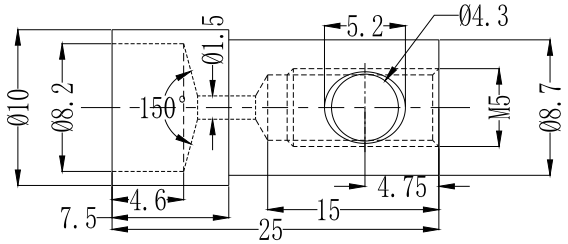
顶端拉出（可选） Top pull out(Optional)
可选量程 Optional range:100-1000mm



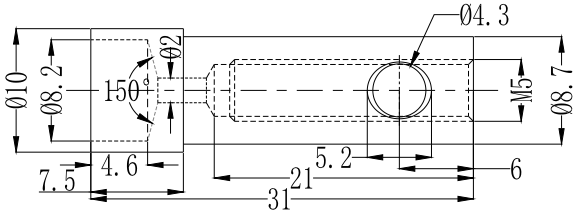




默认拉绳头尺寸（线径0.8mm）：
Default rope head size(Wire diameter 0.8mm):



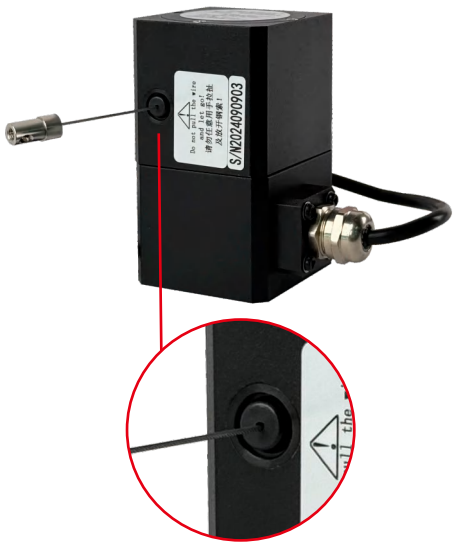
可选拉绳头尺寸（线径1.5mm）：
Optional rope head size (Wire diameter 1.5mm):



WS-S拉绳位移传感器
WS-S Rope Displacement Sensor

产品实物图 Physical Products Pictures

可多方向倾斜45°往外拉出
Can tilt in multiple directions by 45 degrees and pull outward



可水平拉出
Can be pulled out in parallel

产品概述 Overview

WS-S拉绳式位移传感器，又称拉绳尺，拉线尺，拉线式位移传感器，拉绳位移传感器，是直线位移传感器在结构上的精巧集成，充分结合了角度传感器和直线位移传感器的优点，成为一款结构紧凑、测量行程长、安装空间尺寸小、具有高精度测量的优良传感器。WS-S拉绳式位移传感器系列产品具有很大的选择空间，行程从100mm至800mm不等，具有模拟电流信号A2：4-20mA电流输出二线制，电流信号A3：4-20mA电流输出三线制，电流信号A4：4-20mA电流输出四线制；模拟电压信号V1：0-5V，V2：0-10V和RS485数字信号输出。满足大行程、高精度各种信号需求。全防护外壳为铝合金材质，更加美观大方，拉绳可多方向倾斜45°往外拉出，且不影响线性精度及其重复性。

The WEP-S/M series cable displacement sensor, also known as cable encoder, cable ruler, cable ruler, cable encoder, and cable displacement sensor, is a sophisticated integration of linear displacement sensors in structure, fully combining the advantages of angle sensors and linear displacement sensors. It has become an excellent sensor with compact structure, long measurement stroke, small installation space size, and high-precision measurement. The WEP-S/M series cable displacement sensor series products have a large selection space, with travel ranging from 100mm to 800mm. It has a two wire system for analog current signal A2: 4-20mA current output, a three wire system for current signal A3: 4-20mA current output, and a four wire system for current signal A4: 4-20mA current output; Simulated voltage signals V1: 0-5V, V2: 0-10V, pulse signals P: A, B, Z-phase digital output, RS485 digital signal output. Meet various signal requirements for long travel and high precision. It can be applied to crack measurement and monitoring, bridge measurement and monitoring, warehouse location positioning, reservoir dam protection, gate opening control, pressure machinery and other aspects.

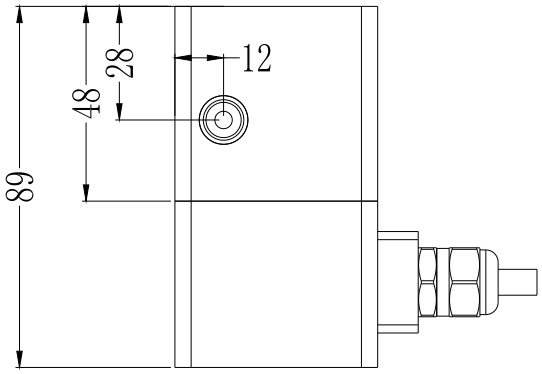
性能参数 Performance Parameter

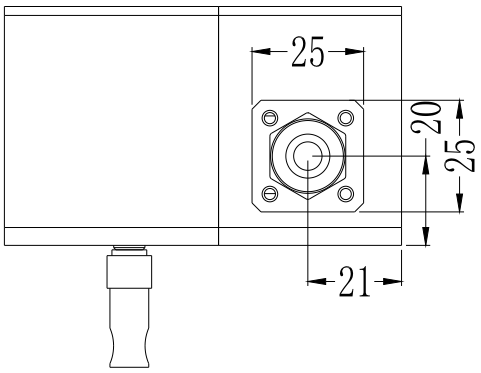
电气指标Electrical Specifications

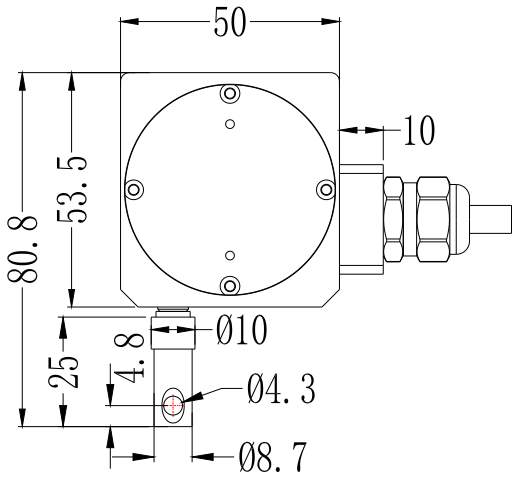
WS-S拉绳位移传感器(100mm-800mm量程) WS-S Rope displacement sensor (100mm-800mm range)	
重复性精度 Repeatability accuracy	±0.02mm
拉力 Pulling	< 600g
重量 Weight	≤600g
震动 Vibrate	10Hz~2000Hz
储存温度 Storage temperature	-20℃~+80℃
发条/弹簧材质 Spring/spring material	进口不锈钢 Imported stainless steel
线性精度 Linear accuracy	600mm以下±0.25%FS，600mm以上±0.1%FS Below 600mm ± 0.25% FS, above 600mm ± 0.1% FS
功率 Power	70℃时1W(行程500mm)，70℃时2W(行程1000mm) 1W at 70 °C(travel 500mm),2W at 70 °C(travel 1000mm)
传感器 Sensor	绕线式多圈电位器 Wire wound multi turn potentiometer
保护等级 Protectionlevel	IP65(只限外壳) IP65 (Shell only)
最大拉伸速度 Maximum reciprocating speed	1000mm/秒 1000mm/second
输入电阻值 Input resistance value	量程≤600mm,电阻：0-5KΩ±10%FS；量程＞600mm,电阻：0-10KΩ±10%FS Measuring range ≤600mm, resistance: 0-5KΩ±10%FS; Measuring range > 600mm, resistance: 0-10KΩ±10%FS
线径规格 Wire diameter specification	直径0.8mm的多股不锈钢钢丝SUS316L材质，外层为尼龙涂层,负载16kg 0.8mm diameter multi strand stainless steel wire SUS316 material, with an outer layer of nylon coating and a load of 16kg
分辨率 Resolution ratio	模拟量信号(电压、电流)：无断解析；数字量信号(RS485)：默认12位，可选16位 Analog signal (voltage, current) : no break analysis; Digital signal (RS485) : 12 bits default, optional 16 bits
可选输出信号 Optional output signal	电位计输出(DC5-10V)，电流/电压/RS485信号输出(DC12-24V) Potentiometer output(DC5-10V),current/voltage/RS485 signal output(DC12-24V)
工作温度 Operation temperature	-20℃~+75℃（低温状态下，需保持无结晶状态； 涂抹防冻液最低工作温度可达-35℃；脉冲输出工作温度为-10℃~65℃） -20℃~+75℃ (at low temperature, it should be kept in a non-crystalline state; The minimum working temperature of applying antifreeze can reach -35℃; Pulse output operating temperature is -10℃~65℃)

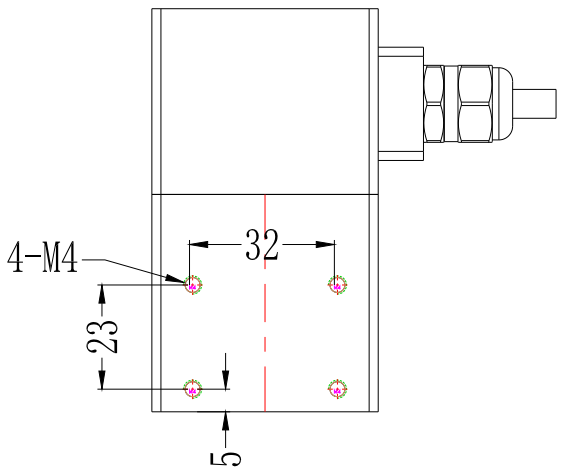
产品尺寸图 Product Dimension Diagram

可选量程 Optional range:100-800mm



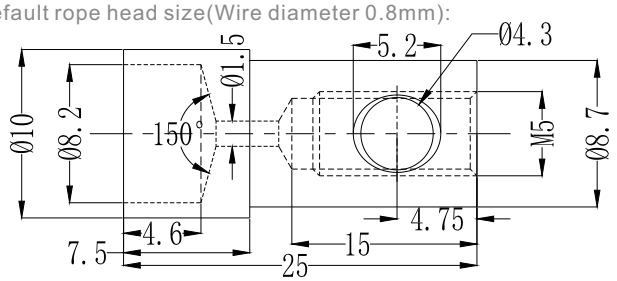






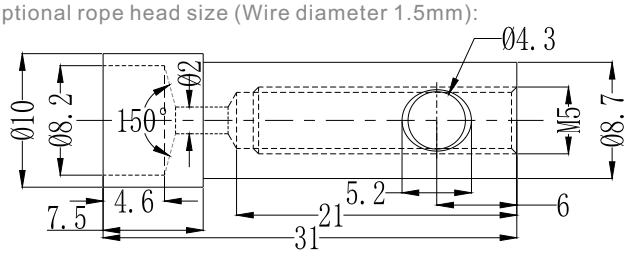
默认拉绳头尺寸（线径0.8mm）：

Default rope head size(Wire diameter 0.8mm):



可选拉绳头尺寸（线径1.5mm）：

Optional rope head size (Wire diameter 1.5mm):



MDS-S 拉绳位移传感器
MDS-S Rope Displacement Sensor

产品实物图 Physical Products Pictures

产品概述 Overview

MDS-S拉绳式位移传感器，又称拉绳编码器，拉绳尺，拉线尺，拉线编码器，拉线位移传感器，是直线位移传感器在结构上的精巧集成，充分结合了角度传感器和直线位移传感器的优点，成为一款结构紧凑、测量行程长、安装空间尺寸小、具有高精度测量的优良传感器。该系列产品具有很大的选择空间，行程从100mm至1200mm不等，具有模拟电流信号A2：4-20mA电流输出二线制，电流信号A3：4-20mA电流输出三线制，电流信号A4：4-20mA电流输出四线制；模拟电压信号V1：0-5V，V2：0-10V，脉冲信号P：A、B、Z相数字输出，RS485 数字信号输出。满足大行程、高精度各种信号需求。

The WEP-S/M series cable displacement sensor, also known as cable encoder, cable ruler, cable ruler, cable encoder, and cable displacement sensor, is a sophisticated integration of linear displacement sensors in structure, fully combining the advantages of angle sensors and linear displacement sensors. It has become an excellent sensor with compact structure, long measurement stroke, small installation space size, and high-precision measurement. The WEP-S/M series cable displacement sensor series products have a large selection space, with travel ranging from 100mm to 2000mm. It has a two wire system for analog current signal A2: 4-20mA current output, a three wire system for current signal A3: 4-20mA current output, and a four wire system for current signal A4: 4-20mA current output; Simulated voltage signals V1: 0-5V, V2: 0-10V, pulse signals P: A, B, Z-phase digital output, RS485 digital signal output. Meet various signal requirements for long travel and high precision. It can be applied to crack measurement and monitoring, bridge measurement and monitoring, warehouse location positioning, reservoir dam protection, gate opening control, pressure machinery and other aspects.

性能参数 Performance Parameter

电气指标Electrical Specifications

型号 Model	MDS-S拉绳位移传感器 MDS-S Rope displacement sensor
重复性精度 Repeatability accuracy	±0.02mm
线性精度 Linear accuracy	600mm以下±0.25%FS，600mm以上±0.1%FS Below 600mm ± 0.25% FS, above 600mm ± 0.1% FS
储存温度 Storage temperature	-20℃~+80℃
重量 Weight	≤600g
拉力 Pulling	< 600g
震动 Vibrate	10Hz-2000Hz
保护等级 Protection level	IP65(只限外壳) IP65 (Shell only)
最大拉伸速度 Maximum reciprocating speed	1000mm/秒 1000mm/second
发条/弹簧材质 Spring/spring material	进口不锈钢 Imported stainless steel
分辨率 Resolution ratio	模拟量信号(电压、电流)：无断解析；数字量信号(RS485)：默认12位，可选16位 Analog signal (voltage, current) : no break analysis; Digital signal (RS485) : 12 bits default, optional 16 bits
线径规格 Wire diameter specification	直径0.8mm的多股不锈钢钢丝SUS316L材质，外层为尼龙涂层,负载16kg 0.8mm diameter multi strand stainless steel wire SUS316L material, with an outer layer of nylon coating and a load of 16kg
传感器 Sensor	1.(默认)绕线式多圈电位器； 2.(可选)光栅式多圈编码器；3.(可选)磁感应(磁电)多圈位置传感器 1.(Default) winding multi-turn potentiometer; 2.(Optional) raster multi-turn encoder; 3.(Optional) Magnetic induction (magnetoelectric) multi-turn position sensor
工作温度 Operation temperature	-20℃~+75℃（低温状态下，需保持无结晶状态； 涂抹防冻液最低工作温度可达-35℃；脉冲输出工作温度为-10℃~65℃） -20℃~+75℃ (at low temperature, it should be kept in a non-crystalline state; The minimum working temperature of applying antifreeze can reach -35℃; Pulse output operating temperature is -10℃~65℃)

性能指标Performance Index

型号 Model	MDS-S-R	输入电压 Input voltage	5/10V DC
功率 Power	70℃时1W(行程500mm),70℃时2W(行程1000mm) 1W at 70 °C (travel 500mm), 2W at 70 °C (travel 1000mm)	输出电阻值 Output resistance value	≤600mm：0-5KΩ±10%FS； >600mm：0-10KΩ±10%FS

型号 Model	MDS-S-mA	输入电流 Input Current	最大25mA Maximum 25mA
输出信号模式 Output signal mode	4-20mA(3线制)、(2线制) 4-20mA (3-wire system),(2-wire system)	工作电压 Working voltage	DC12-24VDC

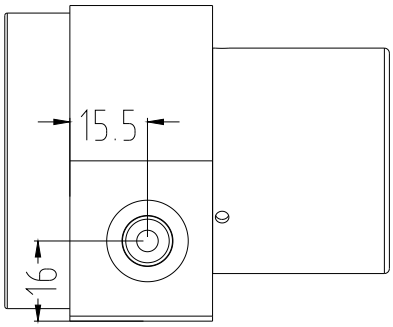
性能指标Performance Index

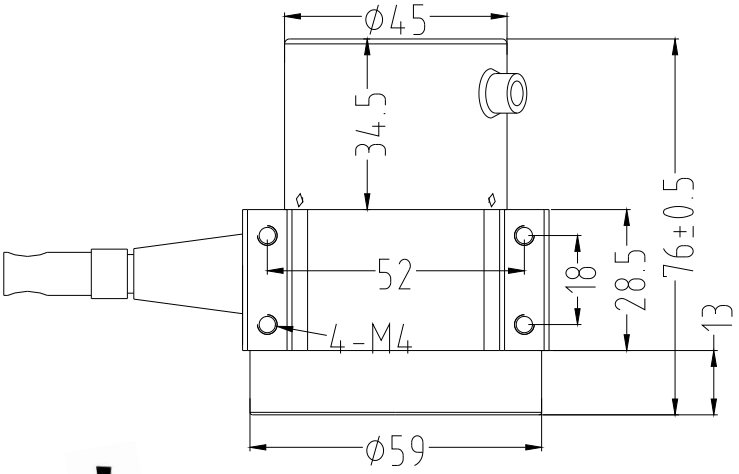
MDS-S-P			
检测方式 Detection	增量型 Incremental	输出波形 Output waveform	脉冲方波 Pulse square wave
测量行程 Measuring stroke	(100mm-1200mm)之间量程任意可选 Any range between 100mm and 1200mm can be selected	分辨率/解析 Resolution ratio/ Analysis	1,0.5,0.2,0.1,0.04
精度 Accuracy	±0.05%FS，±1计算 ± 0.05% FS, ± 1 calculation	输出相 Output phase	AB相或ABZ相 AB phase or ABZ phase
电路特性 Circuit characteristics	电压型，电源型，推挽式，差动式 Voltage type, power type, push-pull type, differential type	工作电压 Working voltage	12-24VDC,固定5VDC 12-24VDC, fixed 5VDC
消耗电流 Consumption current	≤30mA	最大响应频率 Maximum response frequency	300kHz~500kHz
寿命 Life	典型＞1X10^{6}循环 Typical>1x106 cycles	波形上下时间 Waveform up and down time	≤2
保护等级 Protection level	IP65(仅限外壳) IP65 (Shell only)	起动转轴 Start shaft	最大400g Maximum 400g
最大拉伸速度 Maximum reciprocating speed	1000mm/秒 1000mm/second	震动 Vibrate	10g(10±1500Hz)
极性保护 Polarity protection	防反向保护(不使用5V) Anti reverse protection (not using 5V)	冲击 Impact	20g/11ms
重量 Weight	＜450g	拉力 Pulling	最大700g Maximum 700g
发条/弹簧材质 Spring/ spring material	进口不锈钢 Imported stainless steel	储存温度 Storage temperature	-20℃~+80℃
工作温度 Operation temperature	-10℃~60℃(低温状态下，需保持无结晶状态) -10 °C~60 °C (at low temperatures, it is necessary to maintain a crystalline state)		
线径规格 Wire diameter specification	直径0.8mm的多股不锈钢钢丝SUS316L材质，外层为尼龙涂层;负载为23kg Multi strand stainless steel wire SUS316L with a diameter of 0.8mm, with an outer layer coated with nylon; Load is 23kg		
相位差 Phase difference	A,B相位差90℃+45℃(T/4+T/8)，Z相T+T/2 a. B phase difference 90 °C+45 °C (T/4+T/8), Z phase T+T/2		

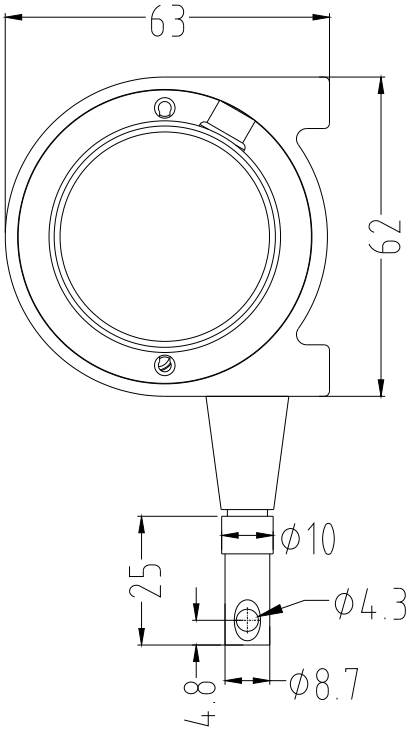
型号 Model	MDS-S-V1/MDS-S-V2		
输出信号模式 Output signal mode	0-5VDC 或 0-10VDC 0-5VDC or 0-10VDC	供应电流 Supply current	最大10mA Maximum 10mA
供应电压 Supply voltage	0-5VDC输出电压为10-24VDC 0-10VDC输出电压为12-24VDC 0-5VDC output voltage is 10-24VDC, 0-10VDC output voltage is 12-24VDC		

产品尺寸图 Product Dimension Diagram

可选量程 Optional range:100-1200mm

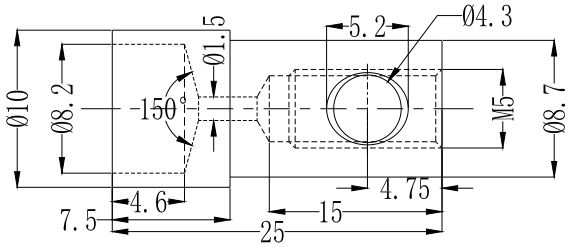






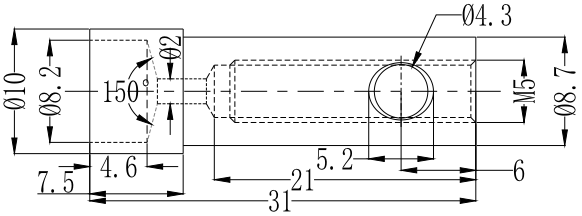
默认拉绳头尺寸（线径0.8mm）：

Default rope head size(Wire diameter 0.8mm):



可选拉绳头尺寸（线径1.5mm）：

Optional rope head size (Wire diameter 1.5mm):



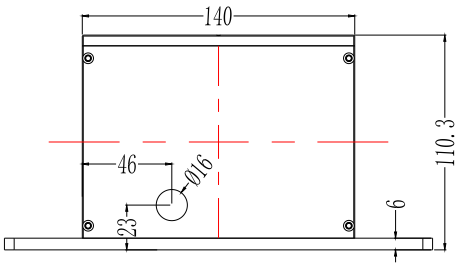
防护罩系列拉绳位移传感器
Protective Cover Series Rope Displacement Sensor

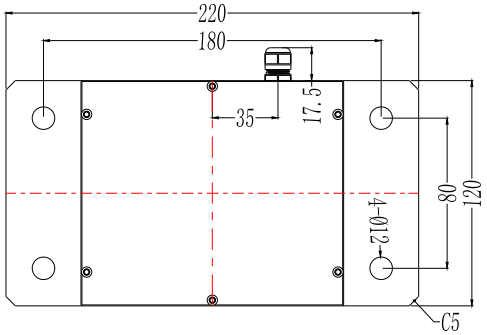
产品实物及尺寸图Product Physical And Dimensional Drawings

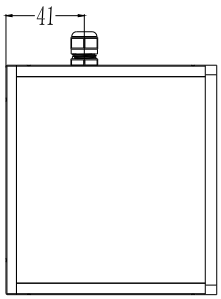
铝合金防护罩 Aluminum Alloy Protective Cover



S







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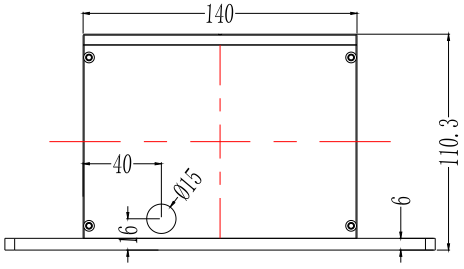
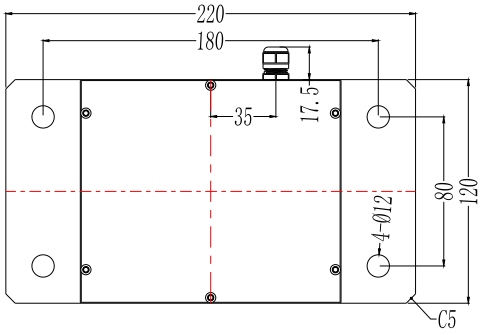
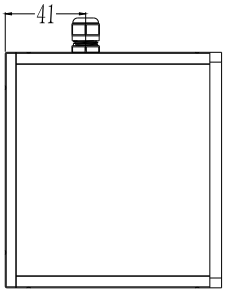
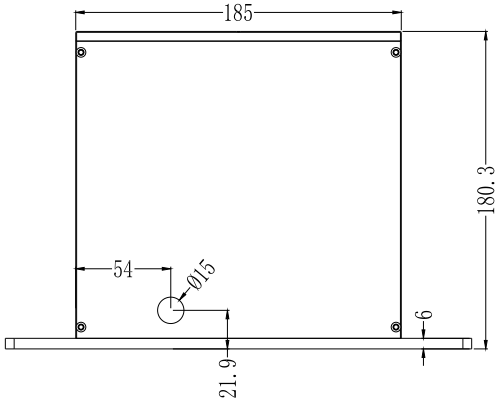
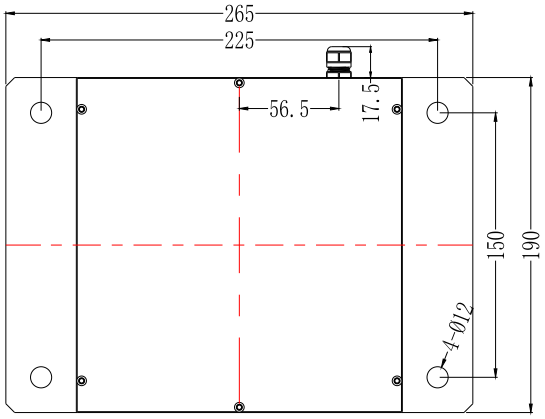


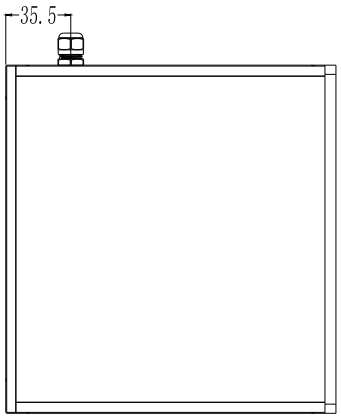




L







MPSFS2系列防水型拉绳位移传感器

MPSFS2 Series Waterproof Rope Displacement Sensor

产品实物图 Physical Products Pictures

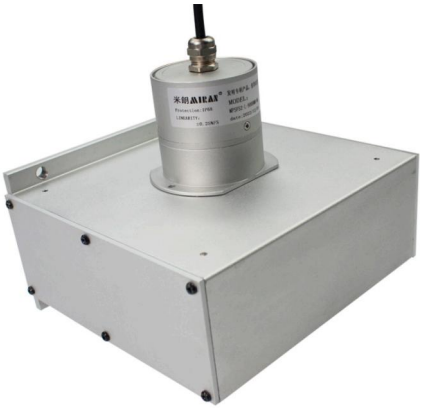
MPSFS2-S

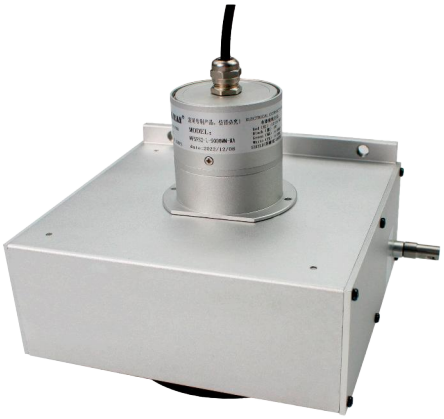


MPSFS2-M



MPSFS2-L





MPSFS2-XL



产品概述 Overview

MPSFS2防水型(磁感应)拉绳位移传感器，又称拉绳编码器拉绳尺，拉线尺，拉线编码器，拉绳位移传感器。采用米朗公司自主研发多圈磁感应绝对值编码器，内部使用高强度灌封胶封装，从而保证磁感应绝对值编码器能够在水下长期正常工作。MPSFS2-S防水绝对值型拉绳位移传感器零部件均采用在水内永不生锈材料制作，如：不锈钢发条和拉绳，铝合金外壳和线轮，塑料发条外壳，陶瓷轴承。S机座和M机座系列产品往复运动的瞬间加速不可超过1米/秒；L机座和XL机座系列产品往复运动的瞬间加速不可超过0.5米/秒；否则将导致钢索断裂。

MPSFS2-S量程范围：100mm-1300mm，MPSFS2-M量程范围：1000mm-4000mm，MPSFS2-L量程范围:：4500mm-10000mm，MPSFS2-XL量程范围：11000mm-35000mm(其他行程可定制)。

MPSFS2 waterproof (magnetic induction) rope displacement sensor, also known as rope encoder rope ruler, rope ruler, rope encoder, rope displacement sensor. We use the independently developed multi coil magnetic induction absolute value encoder by Mirang Company, which is encapsulated with high-strength sealing glue internally to ensure that the magnetic induction absolute value encoder can work normally underwater for a long time. The MPSFS2-S waterproof absolute value pull rope displacement sensor components are all made of materials that will never rust in water, such as stainless steel spring and pull rope, aluminum alloy shell and wire wheel, plastic spring shell, and ceramic bearings. The instantaneous acceleration of the reciprocating motion of the S and M base series products shall not exceed 1 meter/second; The instantaneous acceleration of the reciprocating motion of the L base and XL base series products shall not exceed 0.5 meters per second; Otherwise, it will cause the steel cable to break.

MPSFS2-S range: 100mm-1300mm, MPSFS2-M range: 1000mm-4000mm, MPSFS2-L range: 4500mm-10000mm, MPSFS2-XL range: 11000mm-35000mm (other travel options can be customized).

性能参数 Performance Parameter

电气指标Electrical Specifications

MPSFS2-S/M/L/XL防水型拉绳位移传感器 PSFS2-S/M/L/XL Waterproof and explosion-proof rope displacement sensor	
重复性精度 Repeatability accuracy	±0.02mm
最大拉伸速度 Maximum reciprocating speed	MPSFS2-S/M:1000mm/秒；MPSFS2-L/XL:500mm/秒 MPSFS2-S/M:2000mm/ SEC；MPSFS2-L/XL:500mm/ SEC
线径规格 Wire diameter specification	直径0.8mm或1.5mm的多股不锈钢钢丝SUS316L材质，外层为尼龙涂层; SUS316L multi stranded stainless steel wire with a diameter of 0.8mm or 1.5mm, with an outer layer of nylon coating;
震动 Vibrate	10Hz-2000Hz
线性精度 Linear accuracy	±0.1%FS
工作环境温度 Ambient temperature	-10℃~60℃（低温需保持无结晶状态） -10 °C~60 °C (low temperature needs to be maintained in a crystalline state)
防护等级 Protection grade	IP68
发条/弹簧材质 Spring/ spring material	进口不锈钢 Imported stainless steel
测量行程 Measuring stroke	S:100mm-1300mm M:1000mm-4000mm L:4500mm-10000mm XL:11000mm-35000mm(其他行程可定制)(Other itineraries can be customized)

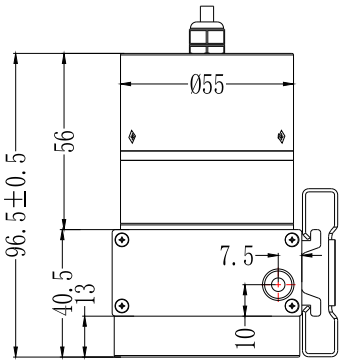
性能指标Performance Index

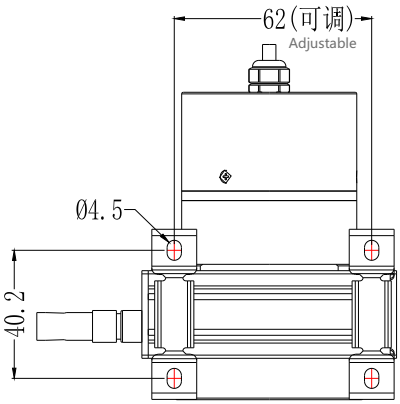
电源电压 Supply voltage	DC12V~DC24V(电压/电流/RS485)波动5%以下 DC12V~DC24V (voltage/current/RS485) fluctuation below 5%
可选输出信号 Optional output signal	电压输出型：0-5V,0-10V, 电流输出型：4-20mA, 数字信号输出型：RS485,SSI Voltage output type: 0-5V, 0-10V, current output type: 4-20mA, digital signal output type: RS485,SSI (以上均为绝对位置输出型)(All of the above are absolute position output types)
分辨率 Resolution ratio	模拟量信号(电压、电流)：16位；数字量信号(RS485)：默认12位，可选16位 Analog signal (voltage, current) : no break analysis; Digital signal (RS485) : 12 bits default, optional 16 bits
电源电压VCC消耗电流 Power supply voltage VCC consumes current	40mA(不含突变情况) 40mA (excluding sudden changes)

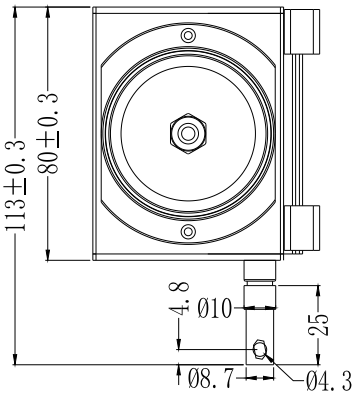
产品尺寸图 Product Dimension Diagram

MPSFS2-S

可选量程 Optional range:100-1300mm

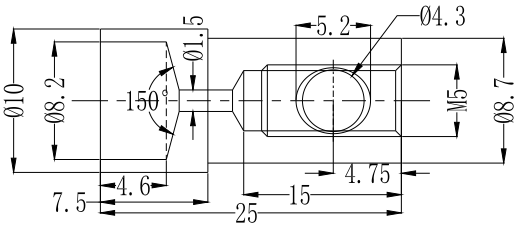






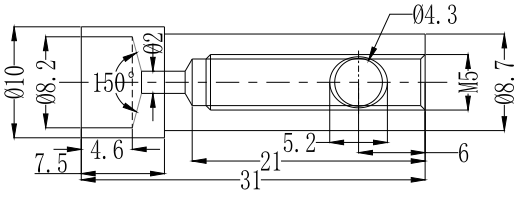
默认拉绳头尺寸（线径0.8mm）：

Default rope head size(Wire diameter 0.8mm):



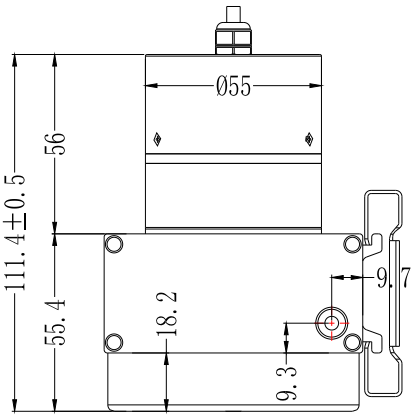
可选拉绳头尺寸（线径1.5mm）：

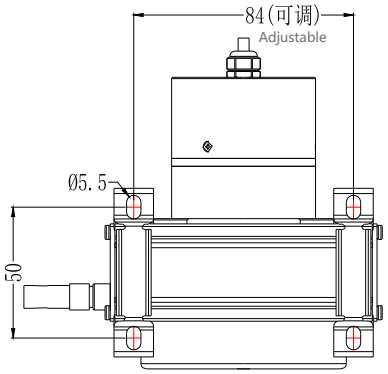
Optional rope head size (Wire diameter 1.5mm):



MPSFS2-M

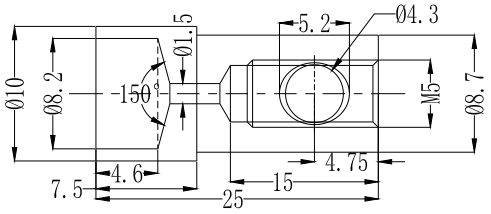
可选量程 Optional range:1000-4000mm

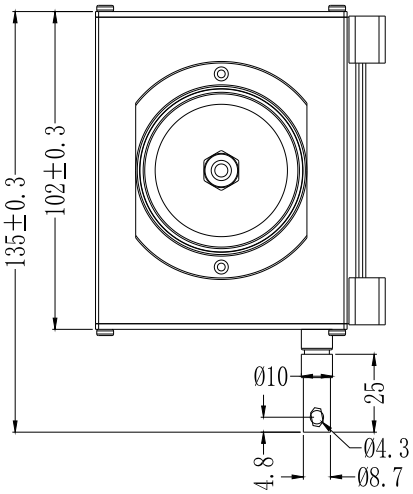




默认拉绳头尺寸（线径0.8mm）：

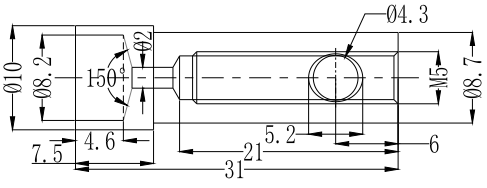
Default rope head size(Wire diameter 0.8mm):





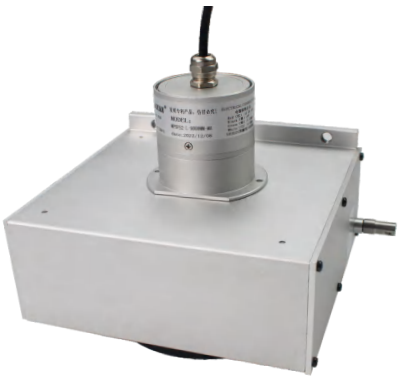
可选拉绳头尺寸（线径1.5mm）：

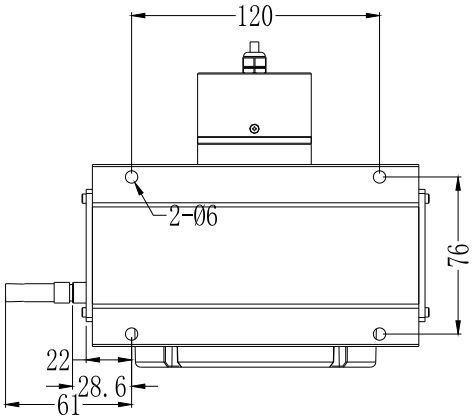
Optional rope head size (Wire diameter 1.5mm):

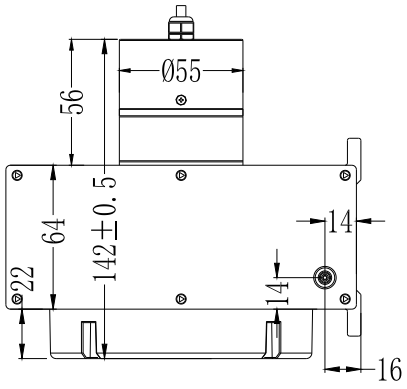


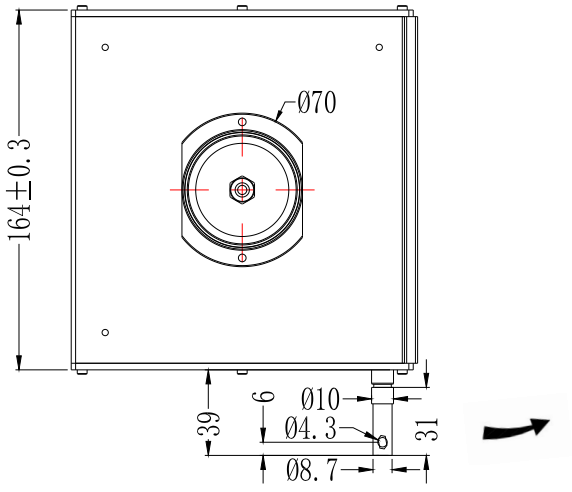
MPSFS2-L

可选量程 Optional range:4500-10000mm



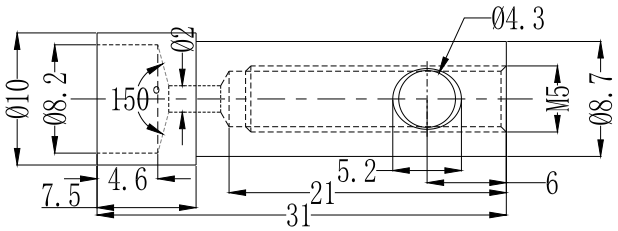






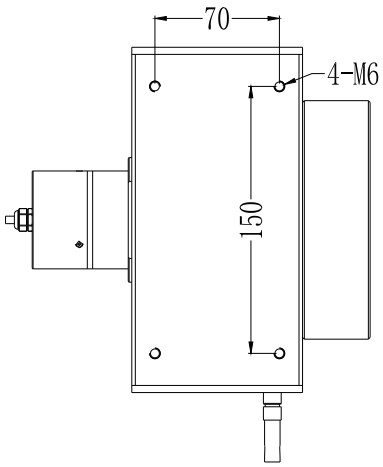
默认拉绳头尺寸（线径1.5mm）：

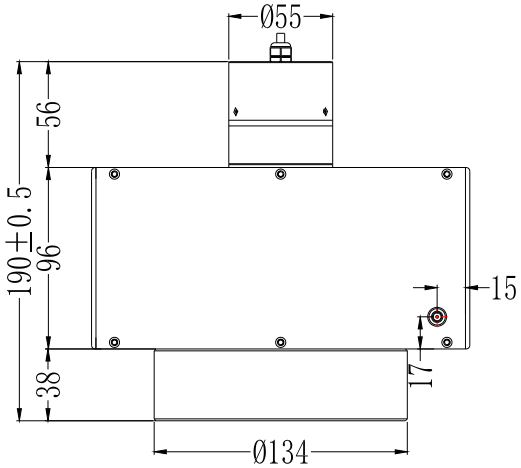
Default rope head size (Wire diameter 1.5mm):

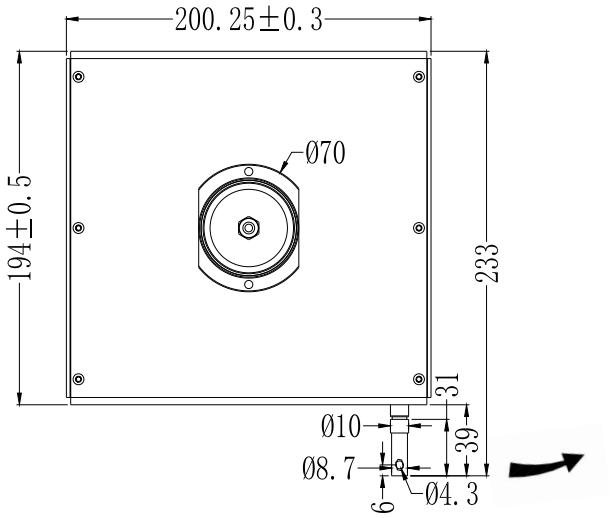


MPSFS2-XL

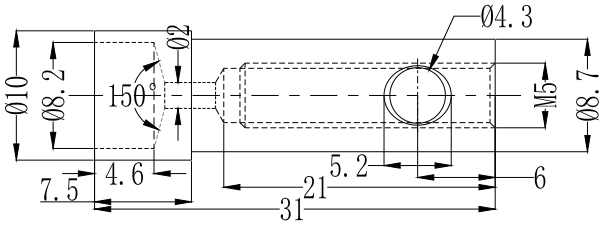
可选量程 Optional range:11000-18000mm





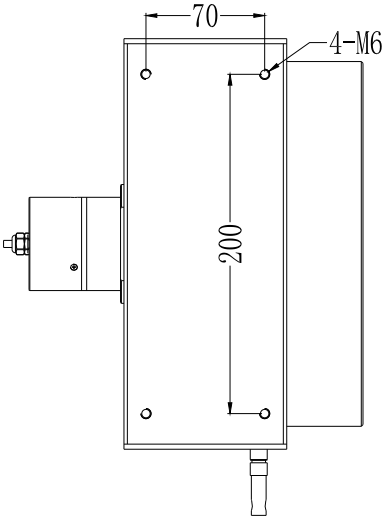


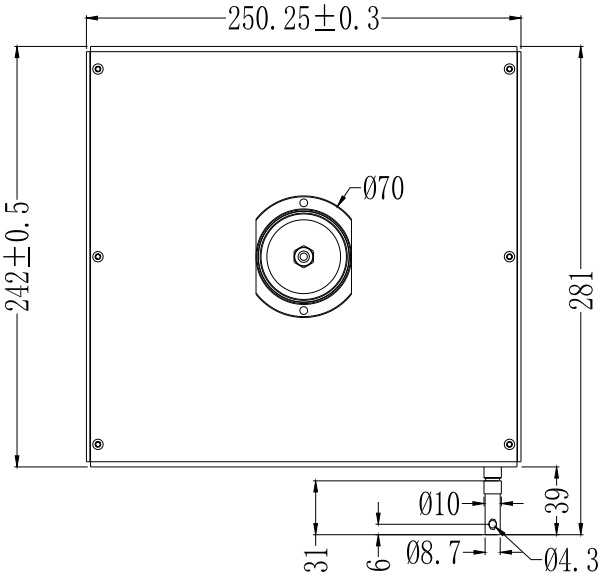
默认拉绳头尺寸（线径1.5mm）：
Default rope head size (Wire diameter 1.5mm):

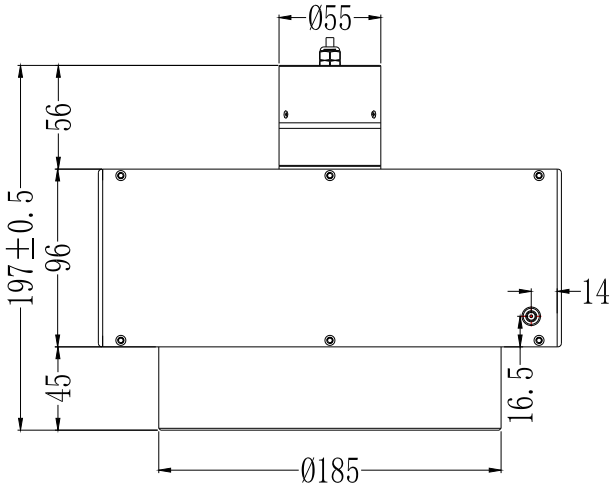


MPSFS2-XL

可选量程 Optional range:19000-28000mm

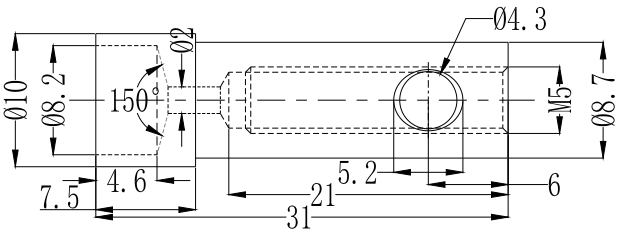






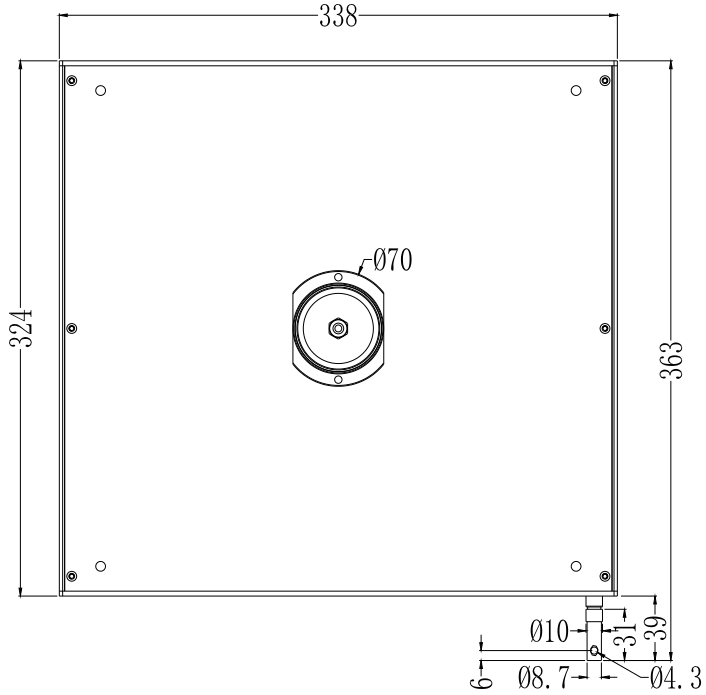
默认拉绳头尺寸（线径1.5mm）：

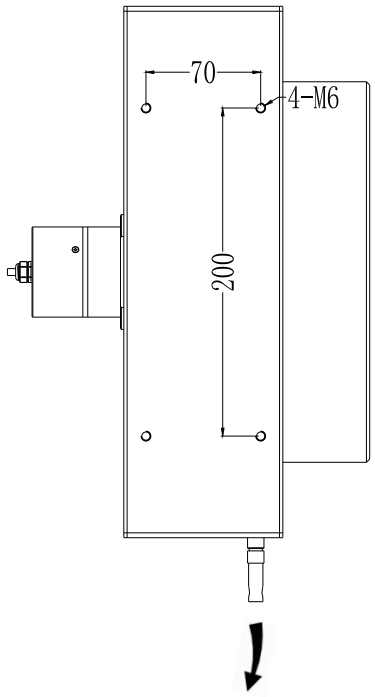
Default rope head size (Wire diameter 1.5mm):

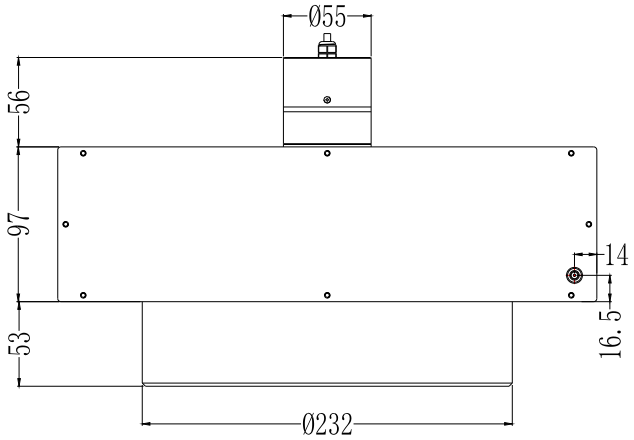


MPSFS2-XL

可选量程 Optional range:29000-35000mm

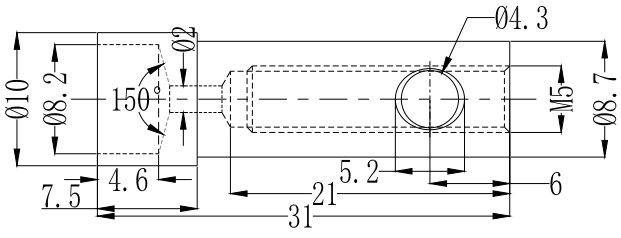






默认拉绳头尺寸（线径1.5mm）：

Default rope head size (Wire diameter 1.5mm):



重载型防水拉绳位移传感器
Heavy duty waterproof rope displacement sensor

产品实物图 Physical Products Pictures

SMZFS2
可选量程 Optional range:100-4000mm



WEPZFS2
可选量程 Optional range:100-4000mm



MPSZFS2

可选量程 Optional range:4500-20000mm

MPSZLFS2

可选量程 Optional range:20000-45000mm

产品概述 Overview

重载型防水拉绳位移传感器，又称拉绳编码器，拉绳尺，拉线尺，拉线编码器，拉线位移传感器，该传感器采用米朗公司自主研发多圈磁感应绝对值编码器，内部使用高强度灌封胶封装，从而保证磁感应绝对值编码器能够在水下长期正常工作。

重载型防水拉绳位移传感器在结构上的精巧集成，充分结合了角度传感器和直线位移传感器的优点，成为一款测量行程长、安装简单、具有高精度测量的绝对值拉线位移传感器。

Heavy-duty waterproof pull rope displacement sensor, also known as pull rope encoder, pull rope ruler, pull wire ruler, pull wire encoder, pull wire displacement sensor, the sensor adopts the multi-circle magnetic induction absolute encoder independently developed by Milang company, the internal use of high-strength pot-sealing adhesive package, so as to ensure that the magnetic induction absolute encoder can work normally under water for a long time.
The compact integration of heavy-duty waterproof cable displacement sensor in structure fully combines the advantages of Angle sensor and linear displacement sensor, and becomes an absolute cable displacement sensor with long measuring stroke, simple installation and high precision measurement.

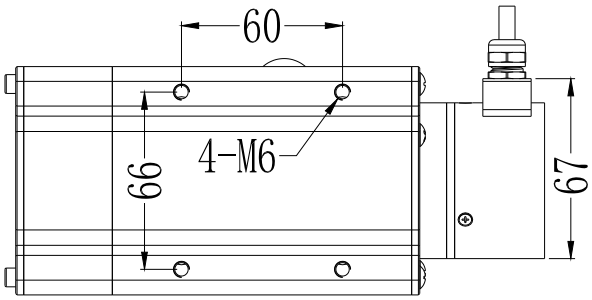
性能参数 Performance Parameter

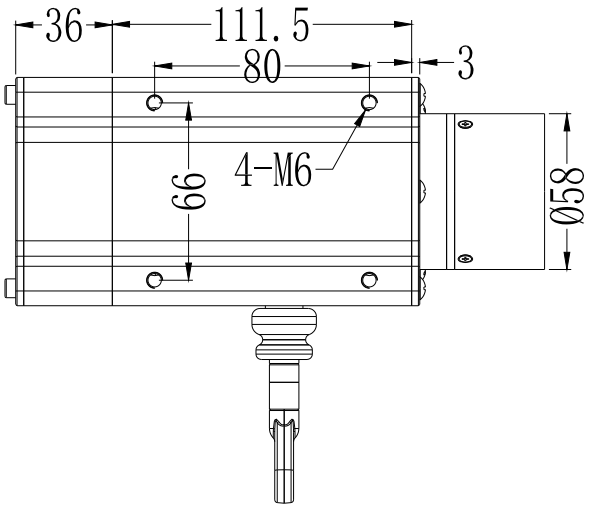
量程 Range	SMZFS2:100-4000mm;WEPZFS2:100-4000mm;MPSZFS2:4500-20000mm; MPSZLFS2:20000-450000mm(其他行程可定制Other itineraries can be customized)
电源电压 Supply voltage	DC12V～DC24V（电压/电流/RS485）波动5%以下 DC12V~DC24V (Voltage/Current/RS485)Fluctuation below 5%
电源电压VCC消耗电流 Power supply voltage VCC consumes current	40mA(不含突变情况) (Excluding mutation situations)
线性精度 Linear accuracy	±0.1%FS
重复性 Repeatability	±0.02mm
分辨率 Resolution ratio	模拟量信号(电压、电流)：16位；数字量信号(RS485)：默认12位，可选16位 Analog signal (voltage, current) : no break analysis; Digital signal (RS485) : 12 bits default, optional 16 bits
线径规格 Range	直径1.5mm的多股不锈钢钢丝SUS316L材质，外层为尼龙涂层; SUS316L multi stranded stainless steel wire with a diameter of 1.5mm, with an outer layer of nylon coating;
防雷击/防浪涌 Lightning/surge protection	有（GB/T 17626.5-2019) Yes (GB/T 17626.5-2019)
防静电 Anti-static	有（GB/T 17626.2) Yes (GB/T 17626.2)
防腐蚀 Anti-corrosion	盐雾测试24H，6级 Salt spray test 24 hours, level 6
抗震动 Vibration resistance	10Hz to 2000Hz，5g
防护等级 Protection grade	IP68
工作环境温度 Ambient Temperature	-10℃～60℃低温状态下，需保持无结晶状态 At low temperatures ranging from -10°C to 60°C, it is necessary to maintain a non crystalline state
输出信号 Output signal	模拟量输出信号：0-5V,0-10V,4-20mA, 数字量输出信号：RS485,SSI,脉冲信号A/B/Z Analog output signal: 0-5V,0-10V,4-20mA, digital output signal: RS485,SSI, pulse signal A/B/Z

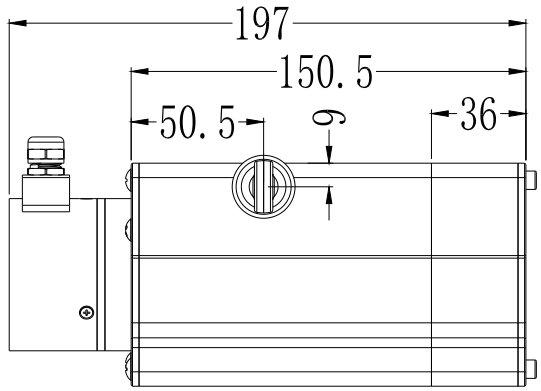
产品尺寸图 Product Dimension Diagram

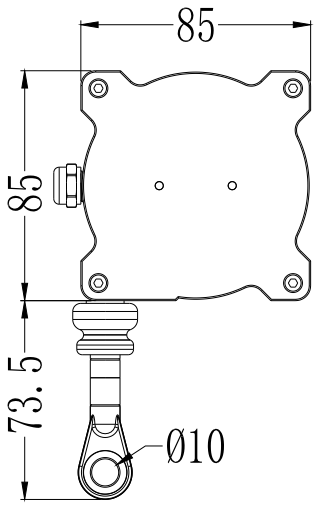
SMZFS2

可选量程 Optional range:100-4000mm









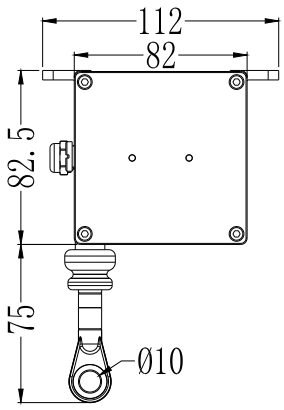
注：安装时请利用底部4个螺丝孔固定，依现场及机器安装空间设施需要，直接安装或另加保护或其他机械使用。

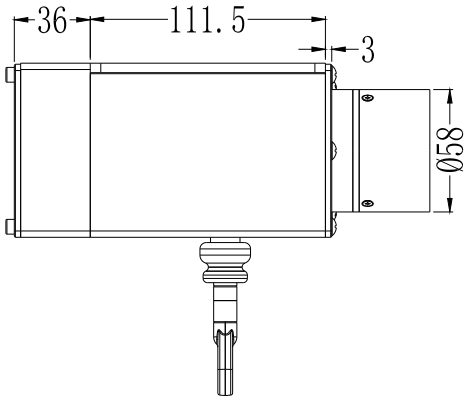
Note: Please use the four screw holes at the bottom to fix the installation. According to the requirements of the site and the installation space of the machine, directly install or add protection or other mechanical use.

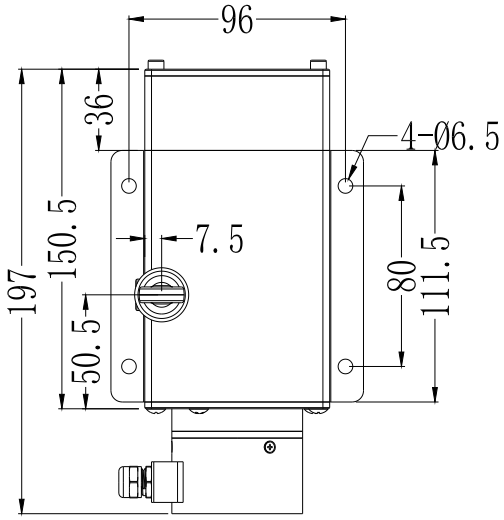
产品尺寸图 Product Dimension Diagram

WEPZFS2

可选量程 Optional range:100-4000mm







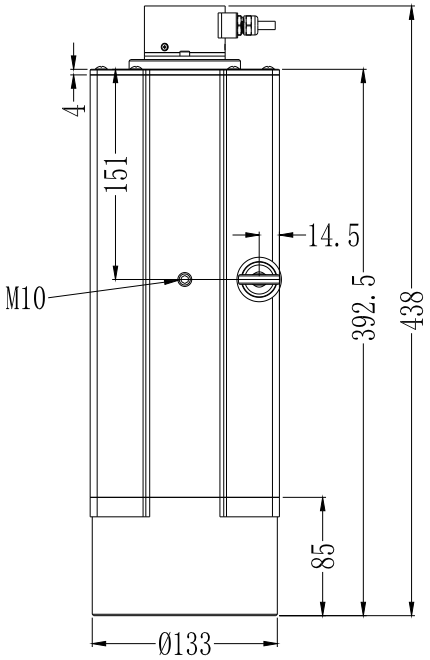
注：安装时请利用底部4个螺丝孔固定，依现场及机器安装空间设施需要，直接安装或另加保护或其他机械使用。

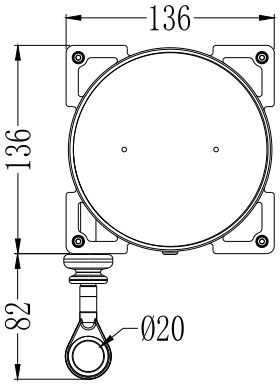
Note: Please use the four screw holes at the bottom to fix the installation. According to the requirements of the site and the installation space of the machine, directly install or add protection or other mechanical use.

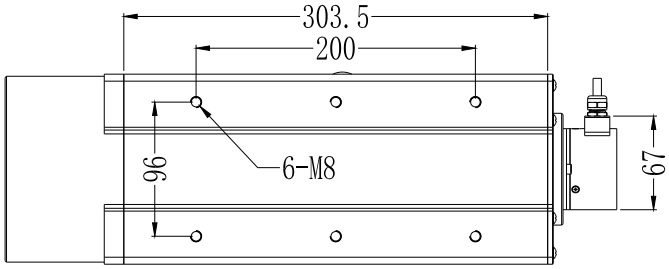
产品尺寸图Product Dimension Diagram

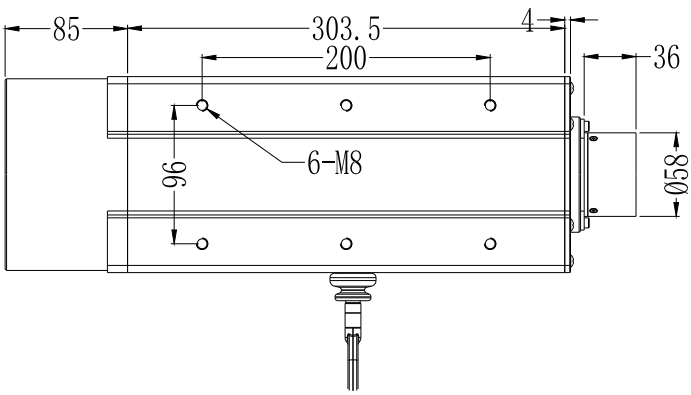
MPSZFS2

可选量程 Optional range:4500-20000mm







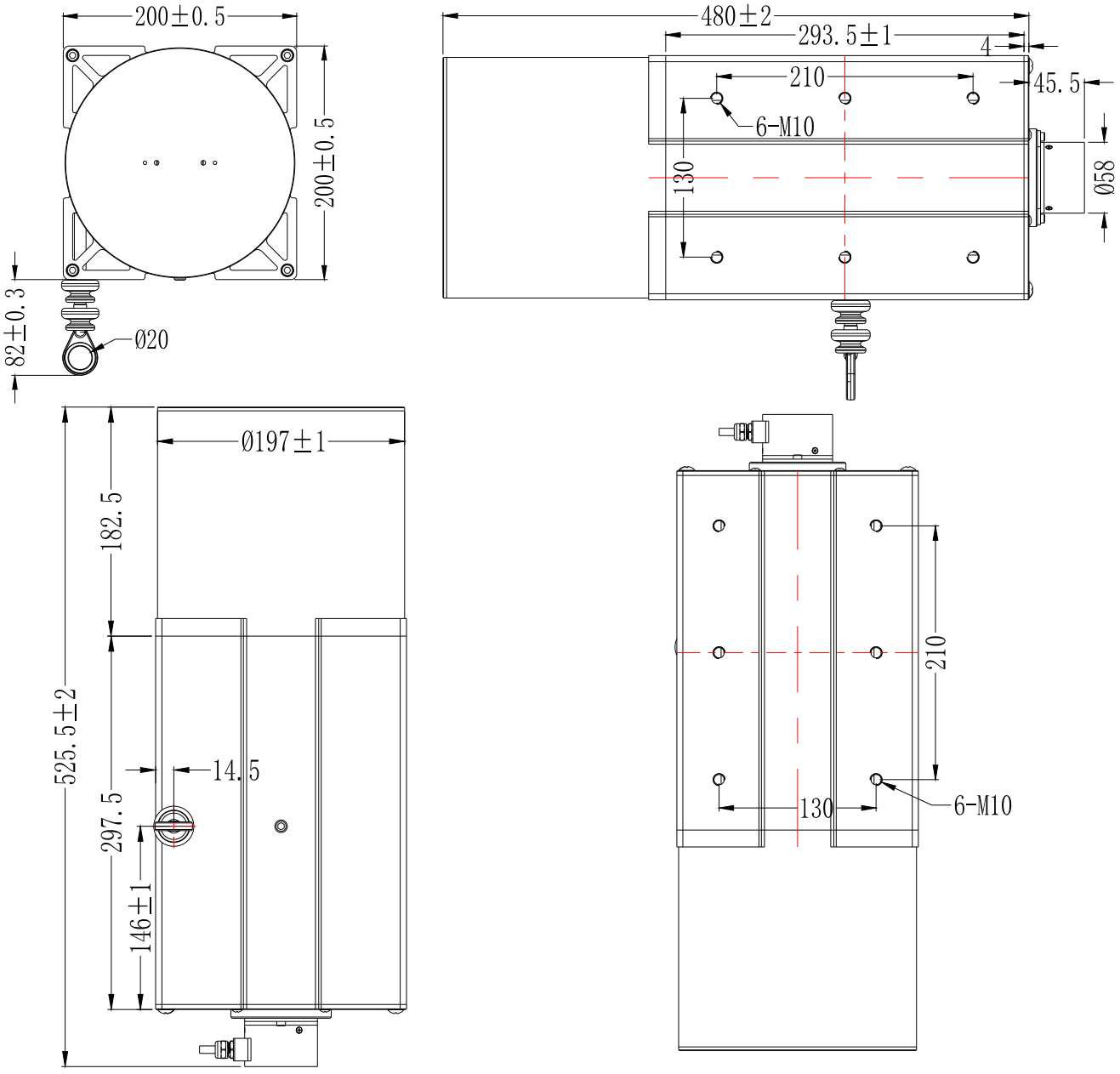


注：安装时请利用侧面或底面6个螺丝孔固定，依现场及机器安装空间设施需要，直接安装或另加保护或其他机械使用。

Note: Please use the 6 screw holes on the side or bottom side to fix the installation. According to the needs of the site and the installation space of the machine, directly install or add protection or other mechanical use.

MPSZLFS2

可选量程 Optional range:20000-45000mm



注：安装时请利用侧面或底面6个螺丝孔固定，依现场及机器安装空间设施需要，直接安装或另加保护或其他机械使用。

Note: Please use the 6 screw holes on the side or bottom side to fix the installation. According to the needs of the site and the installation space of the machine, directly install or add protection or other mechanical use.

MFB-MPSFS2 防水防爆型拉绳位移传感器

MFB-MPSFS2 Waterproof Rope Displacement Sensor

产品实物图 Physical Products Pictures

MFB-MPSFS2-S



MFB-MPSFS2-M



MFB-MPSFS2-L



MFB-MPSFS2-XL



产品概述 Overview

MFB-MPSFS2防水防爆型(磁感应)拉绳位移传感器，又称拉绳编码器拉绳尺，拉线尺，拉线编码器，拉绳位移传感器。采用米朗公司自主研发多圈磁感应绝对值编码器，内部使用高强度灌封胶封装，从而保证磁感应绝对值编码器能够在水下长期正常工作。MFB-MPSFS2-S防水防爆绝对值型拉线式位移传感器零部件均采用在水内永不生锈材料制作，如：不锈钢发条和拉绳，铝合金外壳和线轮，塑料发条外壳，陶瓷轴承。S机座和M机座系列产品往复运动的瞬间加速不可超过1米/秒；L机座和XL机座系列产品往复运动的瞬间加速不可超过0.5米/秒；否则将导致钢索断裂。MFB-MPSFS2-S量程范围：100mm-1300mm；MPSFS2-M量程范围：1000mm-4000mm；MPSFS2-L量程范围：4500mm-10000mm；MPSFS2-XL量程范围：11000mm-35000mm(其他行程可定制)。

MFB-MPSFS2 waterproof and explosion-proof (magnetic induction) rope displacement sensor, also known as rope encoder rope ruler, rope ruler, rope encoder, rope displacement sensor. We use the independently developed multi coil magnetic induction absolute value encoder by Mirang Company, which is encapsulated with high-strength sealing glue internally to ensure that the magnetic induction absolute value encoder can work normally underwater for a long time. The MFB-MPSFS2-S waterproof and explosion-proof absolute value pull type displacement sensor components are all made of materials that will never rust in water, such as stainless steel spring and pull rope, aluminum alloy shell and wire wheel, plastic spring shell, and ceramic bearings. The instantaneous acceleration of the reciprocating motion of the S and M base series products shall not exceed 1 meter/second; The instantaneous acceleration of the reciprocating motion of the L base and XL base series products shall not exceed 0.5 meters per second; Otherwise, it will cause the steel cable to break. MFB-MPSFS2-S range: 100mm-1300mm, MPSFS2-M range: 1000mm-4000mm, MPSFS2-L range: 4500mm-10000mm, MPSFS2-XL range: 11000mm-35000mm (other travel options can be customized).

性能参数 Performance Parameter

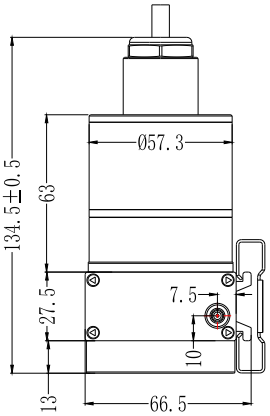
电气指标Electrical Specifications

MFB-MPSFS2-S/M/L/XL防水防爆型拉绳传感器 MFB-MPSFS2-S/M/L/XL Waterproof and explosion-proof rope sensor			
线性精度 Linear accuracy	±0.1%FS	重复性精度 Repeatability accuracy	±0.02mm
震动 Vibrate	10Hz-2000Hz	防护等级 Protection grade	IP68
电源电压VCC消耗电流 Power supply voltage VCC consumes current	40mA(不含突变情况) 40mA (excluding sudden changes)	防爆标志 Explosion proof sign	Ex db IIC T6 Gb
分辨率 Resolution ratio	模拟量信号(电压、电流)：16位；数字量信号(RS485)：默认12位，可选16位 Analog signal (voltage, current) : no break analysis; Digital signal (RS485) : 12 bits default, optional 16 bits		
工作环境温度 Ambient temperature	-10℃~60℃(低温需保持无结晶状态) -10 °C~60 °C (low temperature needs to be maintained in a crystalline state)		
测量行程 Measuring stroke	S:100mm-1300mm M:1000mm-4000mm L:4500mm-10000mm XL:11000mm-35000mm(其他行程可定制)S:100mm-1300mm M:1000mm-4000mm L:4500mm-10000mm XL:11000mm-35000mm(Other itineraries can be customized)		
电源电压 Supply voltage	DC12V~DC24V(电压/电流/RS485)波动5%以下 DC12V~DC24V (voltage/current/RS485) fluctuation below 5%		
线径规格 Wire diameter specification	直径0.8mm或1.5mm的多股不锈钢钢丝SUS316L材质，外层为尼龙涂层; SUS316L multi stranded stainless steel wire with a diameter of 0.8mm or 1.5mm, with an outer layer of nylon coating;		
可选输出信号 Optional output signal	电压输出型：0-5V,0-10V, 电流输出型：4-20mA, 数字信号输出型：RS485,SSI Voltage output type: 0-5V, 0-10V, current output type: 4-20mA, digital signal output type: RS485,SSI (以上均为绝对位置输出型)(All of the above are absolute position output types)		

产品尺寸图 Product Dimension Diagram

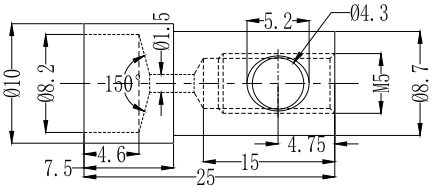
MFB-MPSFS2-S

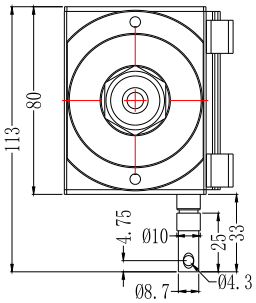
可选量程 Optional range:100-1300mm

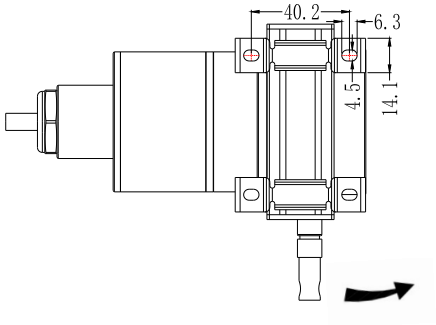


默认拉绳头尺寸（线径0.8mm）：

Default rope head size(Wire diameter 0.8mm):

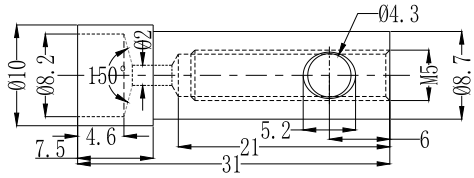






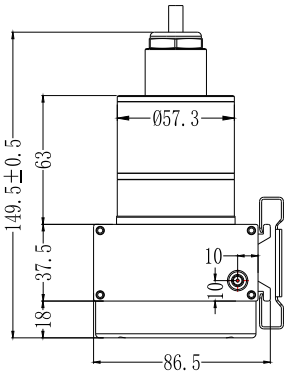
可选拉绳头尺寸（线径1.5mm）：

Optional rope head size (Wire diameter 1.5mm):



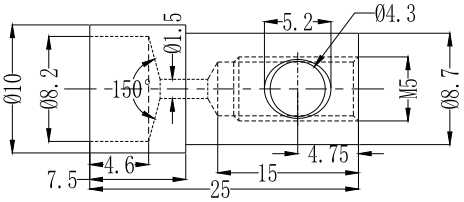
MFB-MPSFS2-M

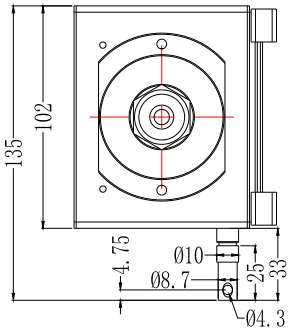
可选量程 Optional range:1000-4000mm

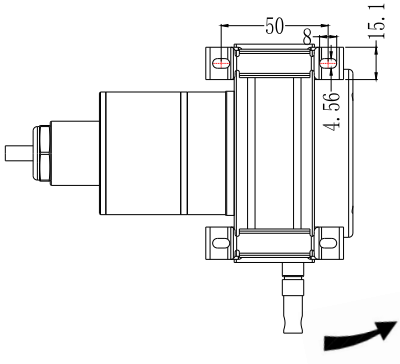


默认拉绳头尺寸（线径0.8mm）：

Default rope head size(Wire diameter 0.8mm):

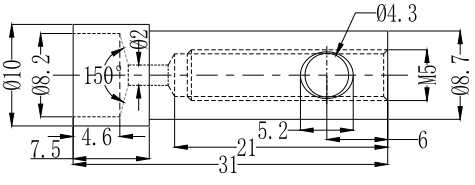






可选拉绳头尺寸（线径1.5mm）：

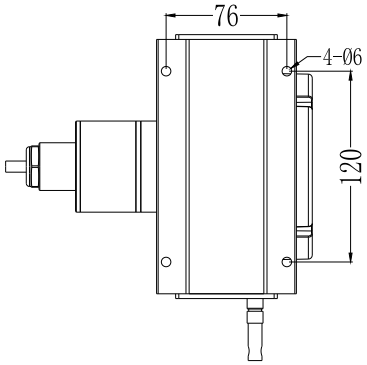
Optional rope head size (Wire diameter 1.5mm):

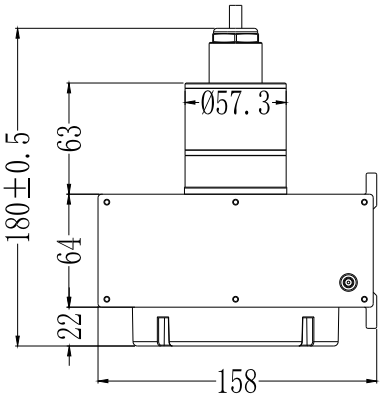


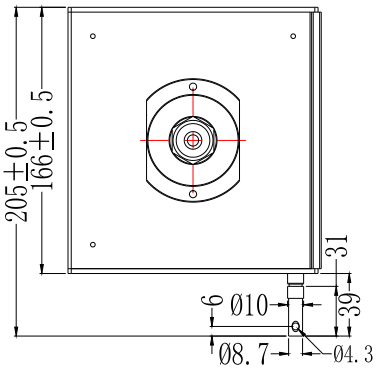
产品尺寸图 Product Dimension Diagram

MFB-MPSFS2-L

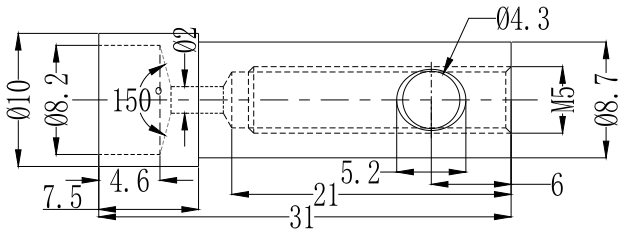
可选量程 Optional range:4500-10000mm





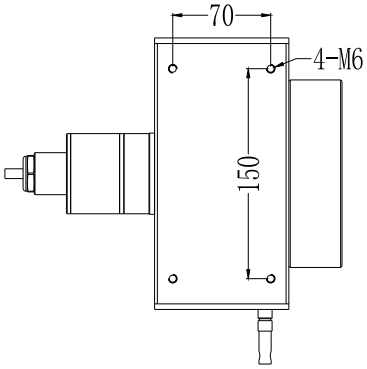


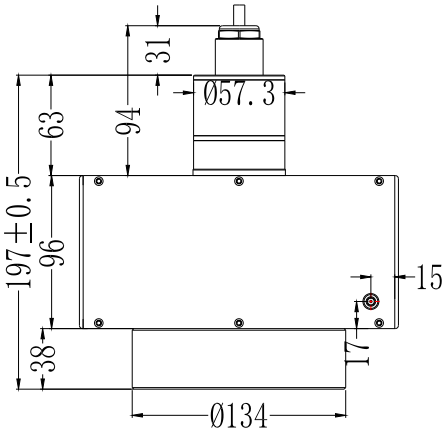
默认拉绳头尺寸（线径1.5mm）：
Default rope head size (Wire diameter 1.5mm):

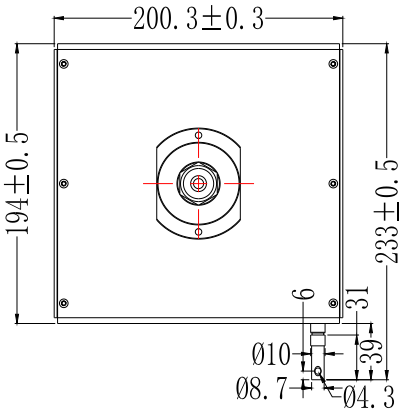


MFB-MPSFS2-XL

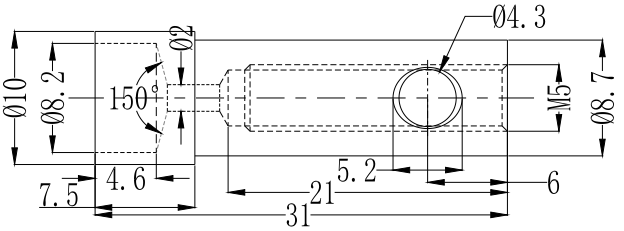
可选量程 Optional range:11000-35000mm







默认拉绳头尺寸（线径1.5mm）：
Default rope head size (Wire diameter 1.5mm):



检测证书 Testing Certificate

CNEX 国家防爆

编号：CNEx22.5301

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	拉绳位移传感器
型号规格	MFB-MPSFS2　　24VDC
防爆标志	Ex db IIC T6 Gb
产品标准	Q/ MLKJ02 -2022
总装图号	MFB-MPSFS2.00

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.使用环境温度：-20℃～+60℃。
2.外壳防护等级：IP68(1m/2h)。

中心主任

颁发日期　2022年11月02日
本证有效期　2022年11月02日至2027年11月01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

注：本证书仅对与认可文件和样品一致的产品有效。登录网站或关注公众号查询真伪　2559 9476 0664 5902
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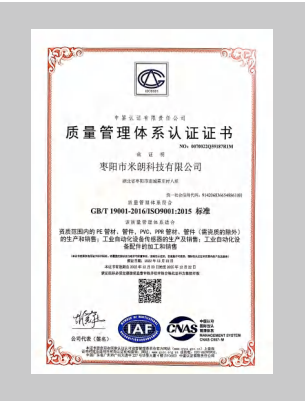
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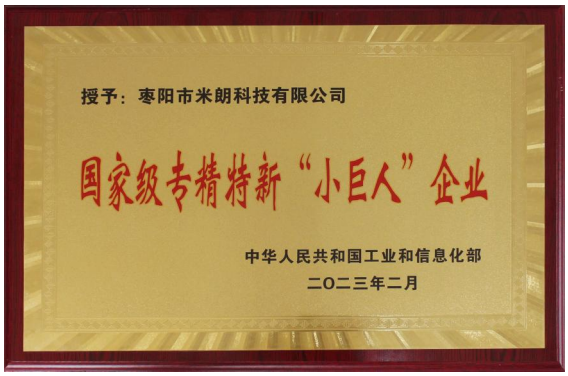
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国家级专精特新“小巨人”企业

中华人民共和国工业和信息化部

二〇二三年二月


高新技术企业

证书

企业名称：枣阳市米朗科技有限公司　　证书编号：GR202042000241

发证时间：2020年12月1日　　有 效 期：三年

批准机关：


专精特新“小巨人”企业

湖北米朗科技股份有限公司

工业和信息化部

有效期：2022年7月1日-2025年6月30日

检测证书 Testing Certificate

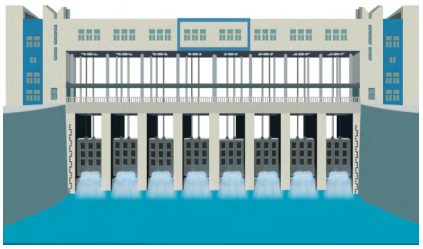

防爆合格证


防爆合格证


防爆合格证


防爆合格证

应用领域 Application Area



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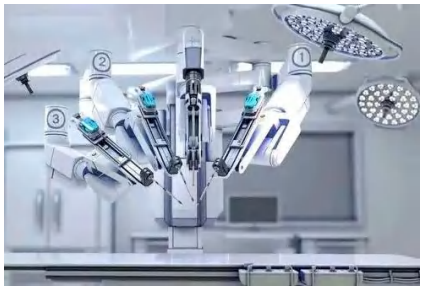
Gate Opening Control

● 建筑健康监测
Building Health Monitoring

● 液压机
Hydraulic Press



● 工业机器人
Industrial Robots

● 纺织机械
Textile Machinery

● 桥梁与大坝监测
Bridge And Dam Monitoring

● 石油钻井设备
Oil Drilling Equipment

● 空气压缩机
Air Compressor

●●●

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

With the development of the core technology, the rope displacement sensor is used more and more widely. It is suitable for factories, mountains, railways, tunnels, ships, machinery, construction, medical industry, bridge laying, dam construction, automobile industry, nuclear industry and aerospace industry.

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20251101-Miran Color page of the retractable measuring tape

主要著作人：李工
Main author: Engineer Li

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