米朗 MIRAN®

中国工信部高精度传感器一条龙应用计划示范项目

国家级专精特新“小巨人”企业，国家级高新技术企业

中国工业强基重点产品，中国工信部传感器一条龙应用计划示范企业

磁致伸缩式静力水准仪

Magnetostrictive Static Level



MGY磁致伸缩式静力水准仪

MGY Magnetostrictive Static Levels

- 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

MGY磁致伸缩式静力水准仪
MGY Magnetostrictive Static Levels

产品实物图Product Picture



外径60mm
outer diameter 60mm



外径100mm
outer diameter 100mm



储液罐
fluid storage tank

产品概述Product Overview

磁致伸缩式静力水准仪是一种高精密液位测量仪器，由一个高精度的磁致伸缩液位计加上储液罐，液位浮球，排气阀，调平支架，水管等部件构成。利用连通器及水平的原理，多个连通管连接在一起的磁致伸缩水准仪，其液面总是在同一水平面上，当某个点出现沉降时，各点设备的液面高度会发生改变，通过各监测点液位高度的变化可以计算出各静力水准仪的相对沉降与差异沉降。其液体的高度是通过磁致伸缩传感器测量，根据电激励发射出脉冲与反射回来的时间差计算出液位的高度。

磁致伸缩式静力水准仪用于测量基础和建筑物各个测点的相对沉降的精密仪器，广泛应用于大坝、高层建筑物、核电站、水利枢纽、岩体、管道、路基、路堑、桥梁、隧道、地铁、大型储罐等结构物的不均匀沉降自动化监测。

储液罐需与磁致伸缩式静力水准仪配套使用，储液罐为201不锈钢材质，美观大方，容量5L、8L、11L可供选择，也可接受非标定制。

Magnetostrictive level meter is a high precision liquid level measuring instrument, which consists of a high precision magnetostrictive liquid level meter plus liquid storage tank, liquid level float, exhaust valve, leveling bracket, water pipe and other components. Using the principle of connectors and levels, multiple connecting tubes are connected together with the magnetostrictive level meter, whose liquid level is always at the same level. When there is a settlement at a certain point, the height of the liquid level of the equipment at each point will be changed, and the relative and differential settlement of each static level meter can be calculated through the change of the liquid level height at each monitoring point. The height of its liquid is measured by the magnetostrictive sensor, and the height of the liquid level is calculated according to the time difference between the pulse emitted by the electric excitation and reflected back.

Magnetostrictive static level is a precision instrument used to measure the relative settlement of various measurement points of foundations and buildings, and is widely used in the automated monitoring of uneven settlement of structures such as dams, high-rise buildings, nuclear power plants, water conservancy hubs, rock bodies, pipelines, roadbeds, road trenches, bridges, tunnels, subways, and large-scale storage tanks.

Liquid storage tank needs to be used with magnetostrictive static level meter, the liquid storage tank is made of 201 stainless steel, beautiful and generous, the capacity of 5L, 8L, 11L can be selected, can also accept non-standard customization.

磁致伸缩式静力水准仪特点：
Magnetostrictive Static Level Features:

1.采用亚克力或铝型材质作为贮液容器，透明度好，强度高，可以直观的反应容器内液面的高度便于目测。

1.The use of acrylic or aluminum profiles as liquid storage containers, good transparency, high strength, can be an intuitive response to the height of the liquid level in the container to facilitate visual inspection.

2.罐体外径100mm的静力水准仪上端盖装有水平仪，便于仪器的安装调平。

2. The upper end cover of the static leveling instrument with an outer diameter of 100mm of the tank is equipped with a leveling instrument, which is convenient for the installation and leveling of the instrument.

3.上下端盖采用铝合金材料制成，表面氧化处理，及轻便又防锈。

3.The upper and lower end caps are made of aluminum alloy with oxidized surface, which is lightweight and rust-proof.

4.传感器采用全不锈钢制造永不生锈，外部全封闭式结构，防水性能好。

4.The sensor is made of stainless steel which will never rust, and the external structure is fully enclosed with good waterproof performance.

5.传感器安装采用螺纹连接固定，无需其它附件，及简单又牢靠。

5.Sensor installation using threaded connection fixed, without other accessories, and simple and reliable.

6.安装架装有3套调节螺栓对仪器底板形成3点支撑，便于仪器的安装调平

6.The mounting bracket is equipped with 3 sets of adjusting bolts to form a 3-point support for the bottom plate of the instrument, which is convenient for the installation and leveling of the instrument.

7.安装架适用在测墩和墙壁安装，无需增加附件，固定简单方便。

7.The mounting bracket is suitable for mounting on the measuring pier and the wall, no need to add accessories, simple and convenient fixing.

电气连接Electrical Connection

接线定义 wiring definition 数字量信号输出 digital signal output	棕色 BROWN	黑色 BLACK	蓝色 BLUE	白色 WHITE	屏蔽线SHIELDED WIRE
	电源正 power positive	电源负 power negative	RS485 A	RS485 B	壳体地 shell ground

接线定义 wiring definition 模拟量信号输出 analog signal output	棕色 BROWN	黑色 BLACK	蓝色 BLUE	白色 WHITE	屏蔽线SHIELDED WIRE
	电源正 power positive	电源负 power negative	信号输出正 signal output positive	信号输出负 signal output negative	壳体地 shell ground

产品型号选型Product Model Selection

MGY - □□□MM - □ / □ - □ - □□

- MGY：米朗科技静力水准仪 Miran technology static leveling system
- □□□MM：可选量程范围：selectable range: (80,100,200,300, 400,500,600mm)
- □：S:默认浮球向上往电子仓方向移动数值变大 S:default float moves upward toward the electronics bin and becomes larger.
- □：A:4-20mA 电流输出 A:4-20mA current output；V1:0-5V 电压输出 V1:0-5V voltage output；V2:0-10V 电压输出 V2:0-10V voltage output；M:RS485（MODBUSRTU）
- □：T:透明主体 T:transparent body；L:铝合金主体 L:aluminum body
- □□：60:罐体外径60mm 60:outer diameter of tank 60mm；100:罐体外径100mm 100:outer diameter of tank 100mm

例如Example:

MGY-300mm-S/M-T-100：代表静力水准仪，300mm量程，浮球向上往电子仓方向移动数值变大，RS485（MODBUSRTU）信号输出，透明主体，罐体外径100mm。

MGY-300mm-S/M-T-100: stands for static level, 300mm range, float moves upwards towards the electronic compartment and the value becomes bigger, RS485 (MODBUSRTU) signal output, transparent body, tank OD 100mm.

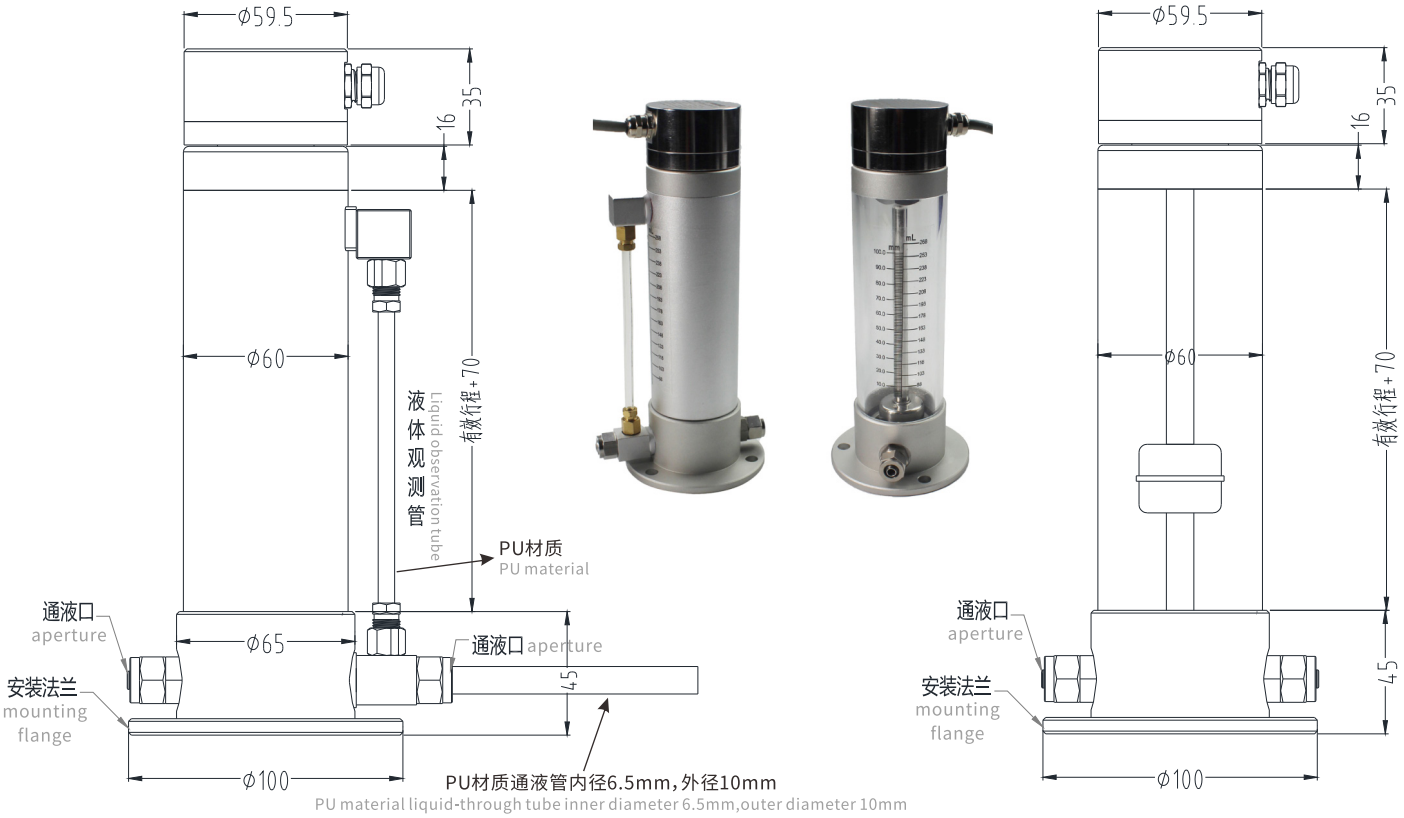
性能参数Performance Parameters

性能指标Performance indicators

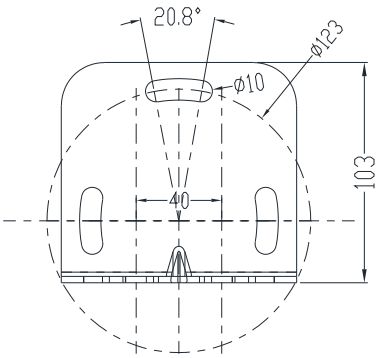
测量范围 Measurement range	80~600mm(其它量程可定制) 80~600mm (other ranges can be customized)		
分辨率 Resolution	0.04mm	工作电压 Operating voltage	DC24V(±1V)
非线性误差 Nonlinear error	≤±0.05%FS	重复性误差 Repeatability error	≤±0.02%FS
温度稳定性 Temperature stability	≤0.002%/℃	环境温度 Environmental temperature	-40°C~+85°C
储液罐 Fluid storage tank	亚克力 / 铝合金 acrylic / aluminum	防护等级 Protection class	IP67
更新频率 Update frequency	一般10hz,可定制 generally 10hz, can be customized		
工作电流 Operating current	<50MA(随量程变化而变化，模拟量信号输出) <50MA (varies with range, analog signal output)		
输出方式 Output method	RS485（MODBUS RTU），4-20mA,0-5V,0-10V		

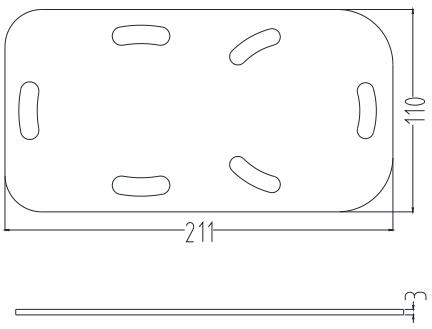
产品尺寸图Product Dimension Drawing

罐体tank ϕ60mm



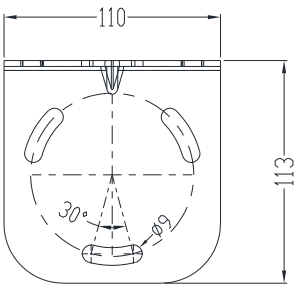
安装附件Mounting accessories

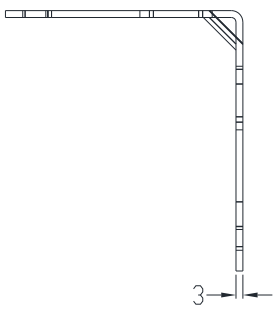






安装支架x1
mounting bracket x 1



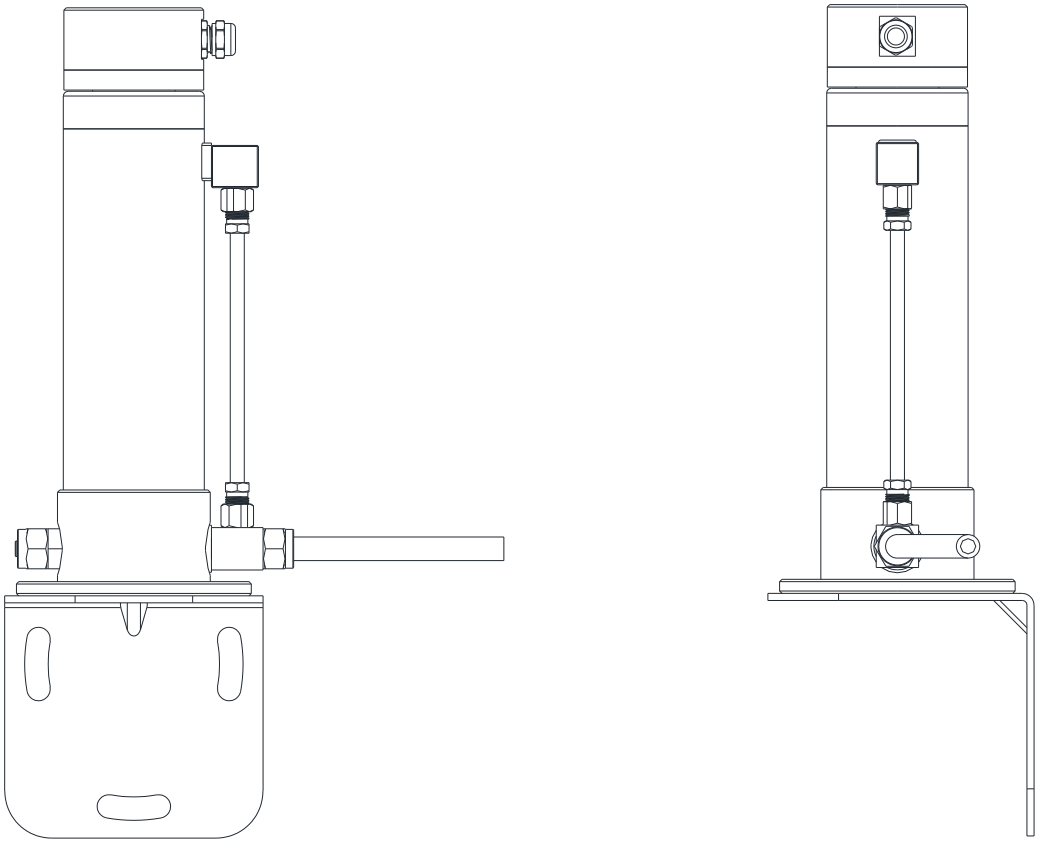




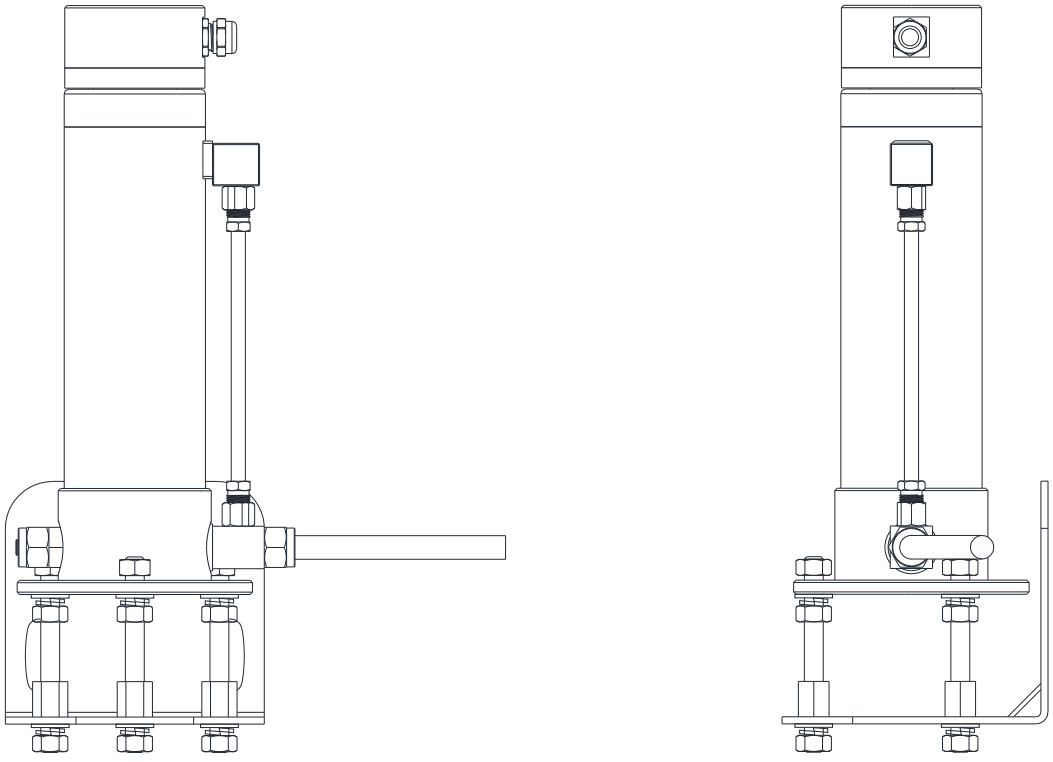
膨胀螺丝x3
expansion screw x3

调平螺栓x3
leveling bolt x3

安装示意图1installation diagram1

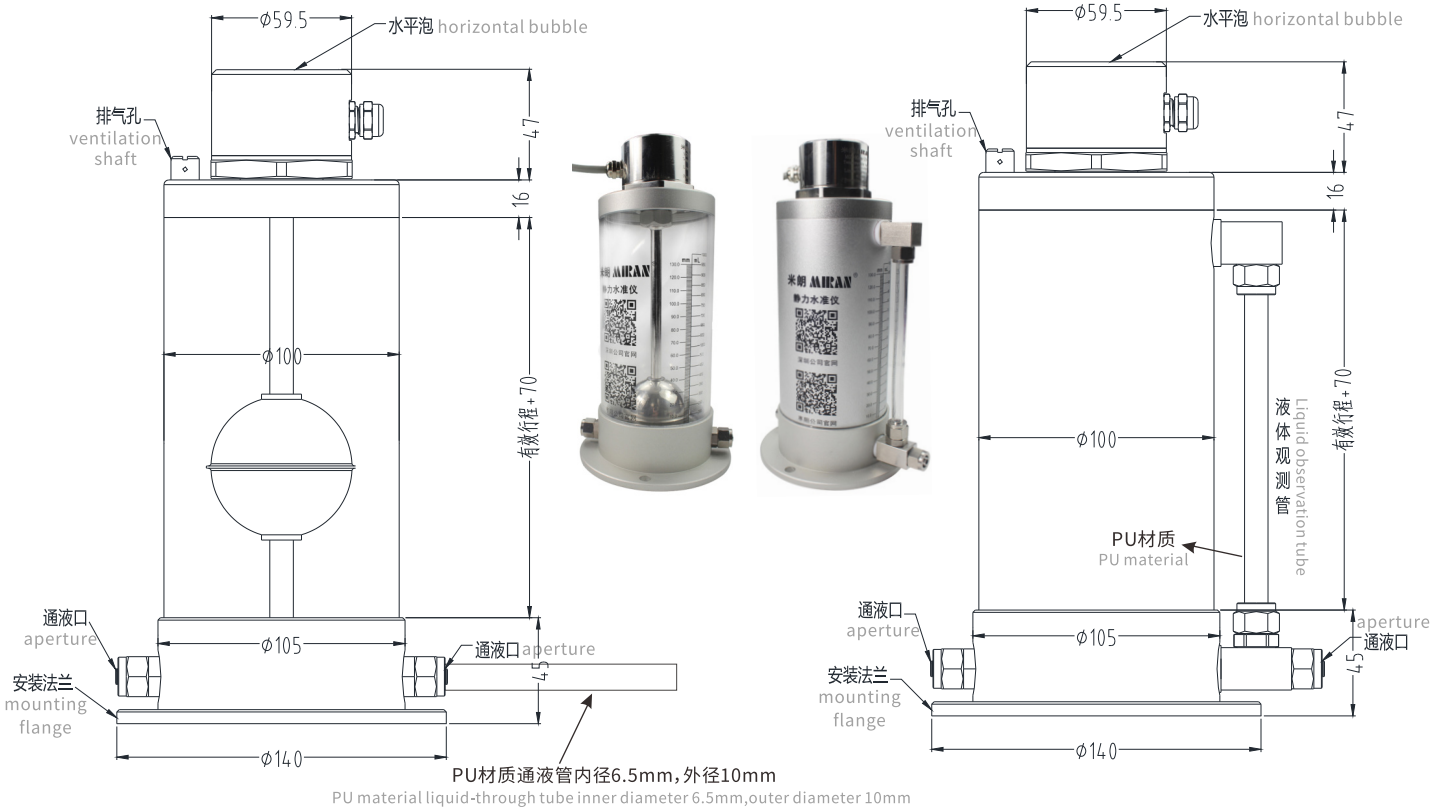


安装示意图2installation diagram 2

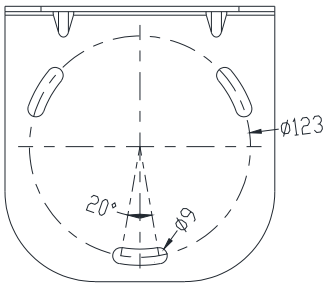


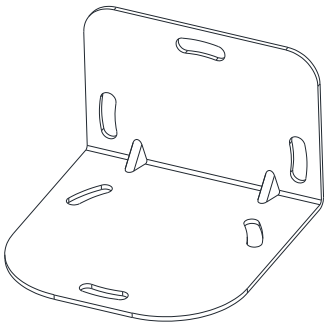
产品尺寸图Product Dimension Drawing

罐体tank ϕ100mm



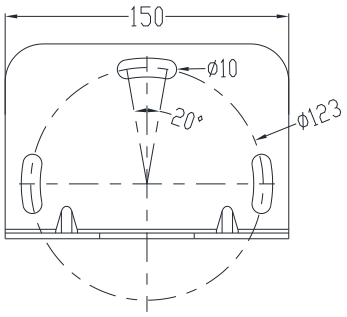
安装附件Mounting accessories

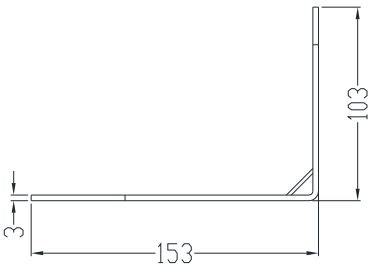






安装支架x1
mounting bracket x 1



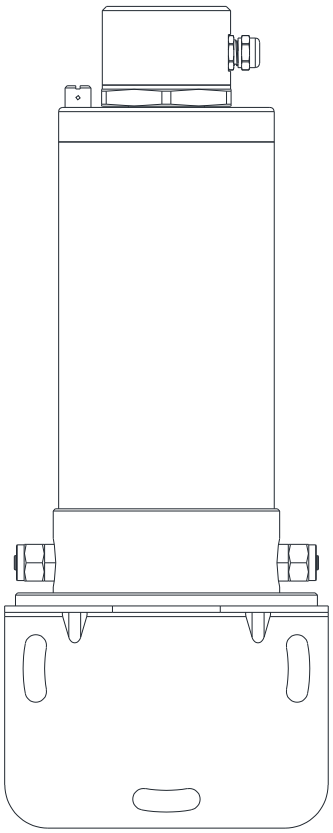


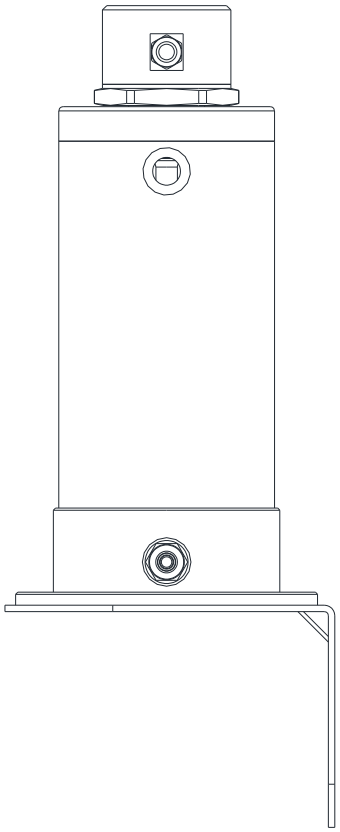


膨胀螺丝x3
expansion screw x3

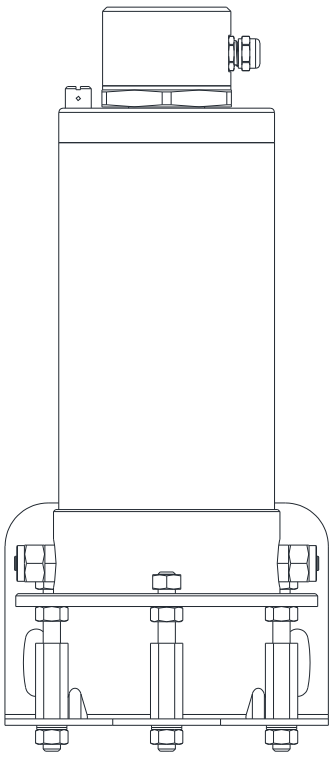
调平螺栓x3
leveling bolt x3

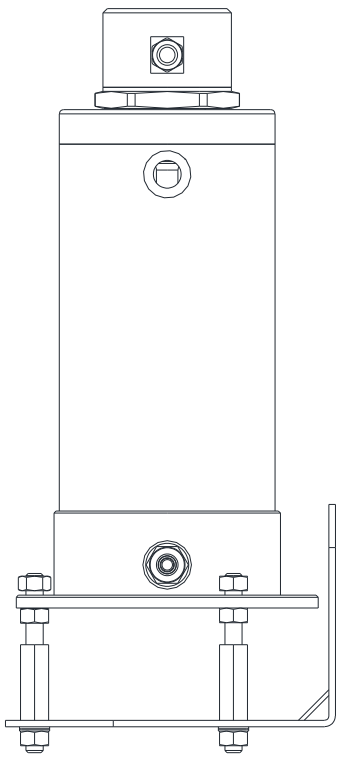
安装示意图1installation diagram1





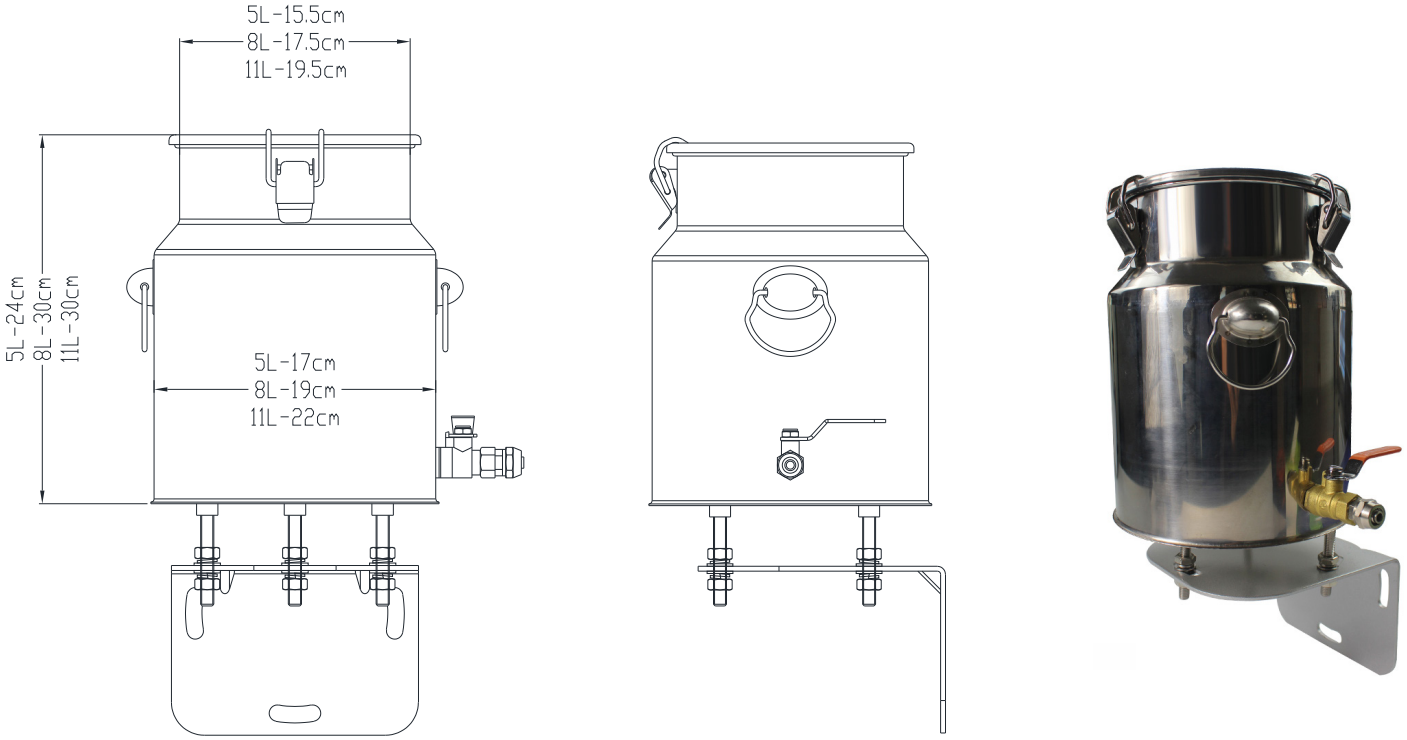
安装示意图2installation diagram 2





产品尺寸图Product Dimension Drawing

储液罐fluid storage tank



静力水准仪容积计算方式：
static level volume calculation method:

圆柱容器的体积=底面积*高；底面积=πR^2；R为半径；此处将π≈3.14

volume of a cylindrical container = base area * height; base area = πR^2; R is the radius; here π ≈ 3.14

例如:直径60mm，量程100mm的静力水准仪:

example: static level with a diameter of 60 mm and a range of 100 mm:

底面积=πR^2=3.14*3cm*3cm=28.26cm^2

base area = πR^2 = 3.14*3cm*3cm = 28.26cm^2

体积=底面积*高=28.26*10=282.6cm^3

volume=base area*height=28.26*10=282.6cm^3

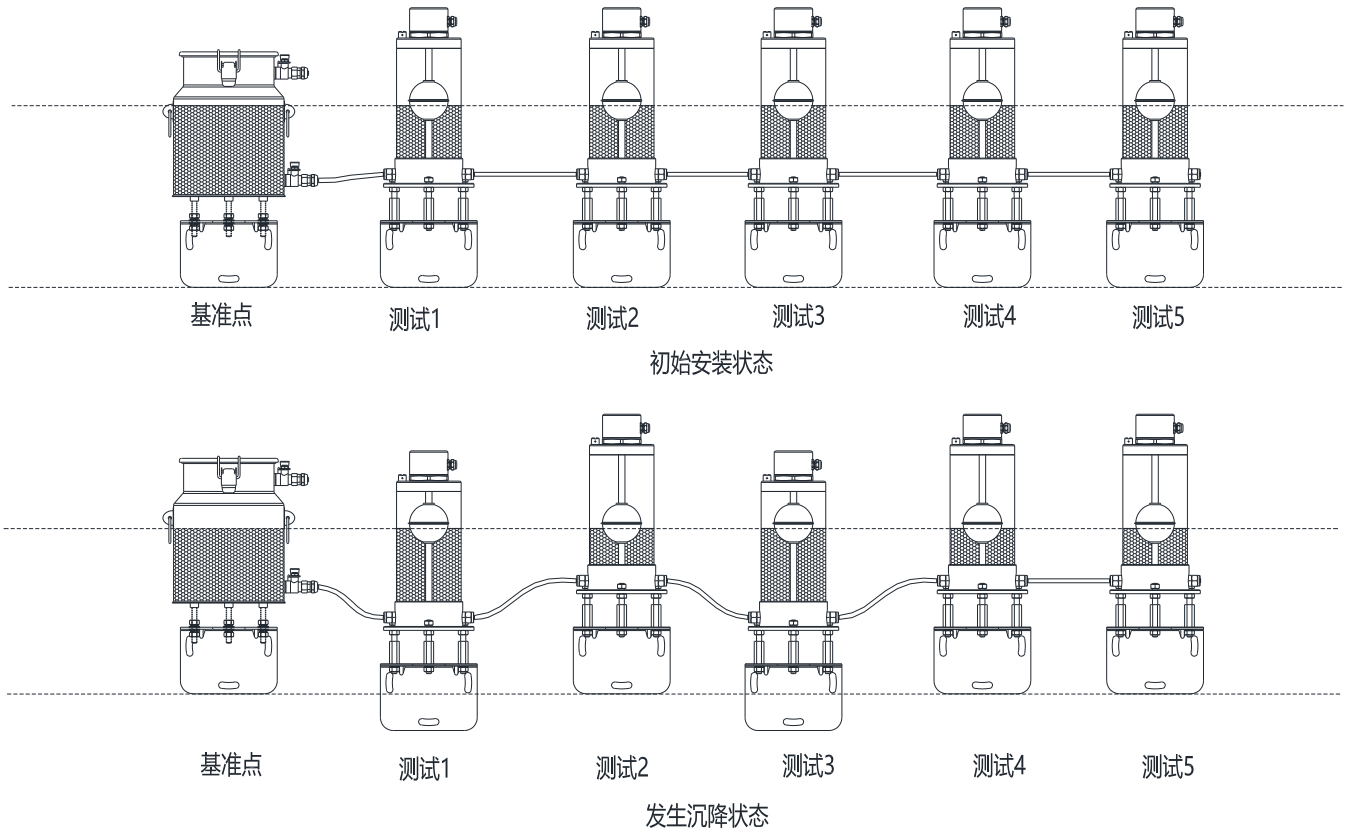
忽略静力水准仪的罐体厚度，则体积等于容积=282.6ml

neglecting the thickness of the tank of the hydrostatic level, the volume is equal to the volume = 282.6 ml

可参考以上容积计算方式，根据所需静力水准仪的罐体直径与量程，计算出静力水准仪的大概容积，参考此容积及静力水准仪的数量，选择适当的储液罐尺寸。

You can refer to the above volume calculation method to calculate the approximate volume of the static level according to the tank diameter and range of the required static level, and then select the appropriate tank size with reference to this volume and the number of static levels.

安装示意图Installation Diagram



利用连通器及水平的原理，多个连通管连接在一起的磁致伸缩水准仪，其液面总是在同一水平面上，当某个点出现沉降时，各点设备的液面高度会发生改变，通过各监测点液位高度的变化可以计算出各静力水准仪的相对沉降与差异沉降。

Using the principle of connectors and levels, multiple connecting tubes are connected together in a magnetostrictive level, whose liquid level is always at the same level, and when settlement occurs at a certain point, the liquid level height of the equipment at each point will change, and the relative and differential settlement of each static level can be calculated through the change of liquid level height at each monitoring point.

安装注意事项Installation Precautions

1.**选择合适的安装位置**：静力水准仪应安装在平稳且不易受到外力影响的地面上，以确保测量结果的准确性。安装位置应选择在稳定、平坦、通视条件好的场地，如稳定的建筑物或构筑物上，或稳固的地面上。

1. **Choose suitable installation position:** the static level meter should be installed on the ground which is smooth and not easily affected by external force to ensure the accuracy of the measurement results.

The installation position should be chosen in a stable, flat site with good visibility conditions, such as on a stable building or structure, or on a solid ground.

2.**安装支架**:静力水准仪需要安装在支架上才能使用。支架安装应该牢固可靠,能够承受水平方向上的荷载。

2. **Mounting bracket**: The static level needs to be mounted on a bracket before it can be used. The bracket should be firmly and reliably mounted and be able to withstand loads in the horizontal direction.

3.**调整水平度**:在安装好静力水准仪后,需要对其进行水平度调整。安装架装有3套调节螺栓对仪器底板形成3点支撑,便于仪器的安装调平。

3. **Adjust the level**: After installing the static level, it is necessary to adjust the level. The mounting bracket is equipped with 3 sets of adjusting bolts to support the bottom plate of the instrument at 3 points, which is convenient for the installation and leveling of the instrument.

4.**防电磁干扰**:由于是靠磁场变动来获取液位变动的,因此不建议在电厂、高铁接触网附近、大型电力设备等磁场活动较强的场所附近使用。

4. **Anti-electromagnetic interference**: Because it relies on magnetic field changes to get the liquid level changes, so it is not recommended to use it near power plants, high-speed railroad contact networks, large-scale power equipment and other places with strong magnetic field activities.

5.**环境温度影响**:浮球体积较大,如果温度变化较大,浮子内部空气的体积变化将导致浮力变化,浮力此时将带来较大的系统误差。因此适合在恒温下做数据的对比。在昼夜温变较为剧烈的地方必须做防热、隔热处理。

5. **Ambient temperature influence**: float volume is large, if the temperature change is large, the volume change of the air inside the float will lead to changes in buoyancy, buoyancy at this time will bring about a large systematic error. Therefore, it is suitable to do the comparison of data at a constant temperature. In the day and night temperature change is more drastic place must be done to prevent heat, heat insulation treatment.

6.**使用过程中的注意事项**:在使用过程中,要注意避免碰撞和摔落等意外情况的发生,以免影响设备的正常工作。应定期清洁设备,保持其干净卫生。

6. **Precautions in the process of use**: In the process of use, care should be taken to avoid accidents such as collision and falling, so as not to affect the normal work of the equipment. The equipment should be cleaned regularly to keep it clean and hygienic.

应用领域Areas of application



• 核电站监测
Nuclear power plant monitoring



• 水利枢纽监测
Water hub monitoring



• 桥梁监测
Bridge monitoring



• 高层建筑物监测
High-rise building monitoring



• 管道监测
Pipeline monitoring



• 地铁监测
Metro monitoring



• 大坝监测
Dam monitoring



• 岩体监测
Rock monitoring

• • •

磁致伸缩式静力水准仪广泛应用于大坝、高层建筑物、核电站、水利枢纽、岩体、管道、路基、路堑、桥梁、隧道、地铁、大型储罐等结构物的不均匀沉降自动化监测。

Magnetostrictive static level is widely used in the automatic monitoring of uneven settlement of structures such as dams, high-rise buildings, nuclear power plants, water conservancy hubs, rock bodies, pipelines, roadbeds, road trenches, bridges, tunnels, subways, large storage tanks and so on.



辐射全国 放眼世界

Radiate to the whole country and see the world

质量第一 Quality First

用户至上 Customer First

诚信为本 Credit First

本彩页内产品尺寸，性能等参数仅作为参考，随着产品的不断更新换代，或可能有所调整改变，恕不另行通知，最终尺寸要以产品实物为准。实际产品尺寸和性能参数等，需要在实际购买的时候，与我司业务或者技术人员沟通确认最终数据，以最终书面确认的尺寸和数据为准。

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

将致力于位移、物位、角度等测控领域

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

为客户提供一站式解决方案的产品与服务

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

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20260401 - Tension sensor brochure

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