

工作原理 Working Principle

基于导纳原理,由容器内的探头和容器壁构成一个电容的二块极板,由探头与容器壁之间的空气以及探头本身的绝缘层构成该电容的介电材料,当容器内物料上升,该电容介电材料中的部分空气被物料所取代,因为各种物料(介电常数 >1)均有不同于空气(介电常数 $=1$)的介电常数,所以该电容的电容量以及总阻抗也随之变化,这一变化被电路测量后,再通过放大器,转换成线性的4~20mA电流信号输出,并连续跟踪、测量、转换、输出电信号。

Based on the principle of admittance, the probe inside the container and the container wall form the two-pole plates of the capacitor, while the air between the probe and the container wall, and the insulating layer of the probe constitute the dielectric material. When the material in the container rises, part of the air in the dielectric material of the capacitor is replaced by the material because various kinds of materials (dielectric constant >1) have dielectric constant different from that of air (dielectric constant $=1$). Therefore, the capacity and the total resistance of the capacitor also change, which is measured by the circuit and then converted into a linear 4~20mA current signal output through the amplifier to continuously track, measure, convert and output the current signal.

技术参数 Technical Specification

- 电源电压: 24VDC
- 量程范围: 0.3m-30m
- 输出信号: 4-20mA, 两线制
- 功率: 3W
- 线性精度: $\pm 0.5\%$
- 温度线性: $\pm 0.0015\%/1^\circ\text{C}$
- 环境温度: $-30^\circ\text{C}\sim 60^\circ\text{C}$
- 外壳标准: 重型铸铝, IP65
- 电气接口: M20 $\times$ 1.5

- **Power Supply:** 24VDC
- **Measuring Range:** 0.3m-30m
- **Output Signal:** two-wire 4-20mA
- **Power:** 3W
- **Linear Precision:** $\pm 0.5\%$
- **Temperature Linearity:** $\pm 0.0015\%/1^\circ\text{C}$
- **Working Temperature:** $-30^\circ\text{C}\sim 60^\circ\text{C}$
- **Shell Standard:** Cast aluminum, IP65
- **Electrical Interface:** M20 $\times$ 1.5

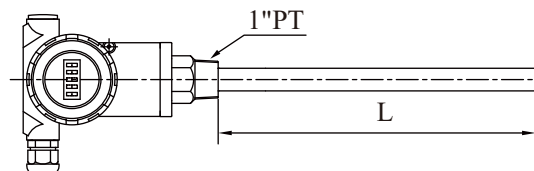
特点 Features

- ▲ 通用性强: 广泛应用于各种导电和非导电的测量。
- ▲ 抗粘附性: 采用专业的抗粘附电路,可以消除物料粘附而产生的虚假信号。
- ▲ 探头可拆: 探头与控制器之间没有电缆连接,随时可以将控制器拆除更换维修,不影响进出物料。
- ▲ 探头耐高低温: 探头适合 -30°C 至 260°C 的工作环境。
- ▲ 贴片电路: 采用贴片电子线路,提高了抗震性,使电路参数更稳当可靠。
- ▲ 智能诊断: 通电后,仪表电路自动检测工作状态是否正常。

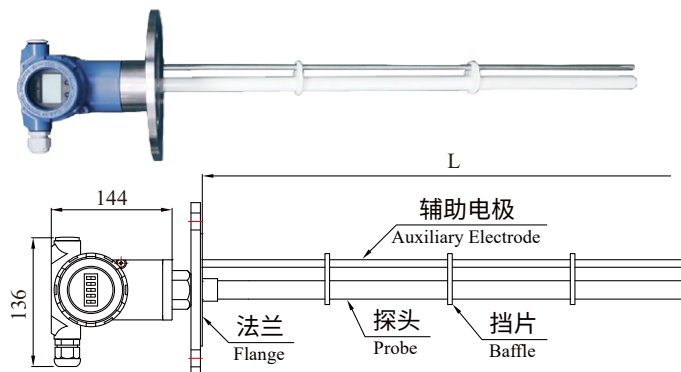
- ▲ **Wide Application:** Application for the measurement of various conductive and non-conductive materials.
- ▲ **Anti-adhesion:** Professional anti-adhesion circuit to eliminate false signals produced by medium adhesion.
- ▲ **Detachable Probe:** No cable connection between the probe and the controller for disassembling, replacing and repairing the controller without influence on charging and discharging of the material.
- ▲ **High and Low Temperature Resistant Probe:** Applicable for $-30^\circ\text{C}\sim 260^\circ\text{C}$ working environment.
- ▲ **SMT Circuit:** SMT Circuit for improved anti-vibration feature and stable and reliable parameters.
- ▲ **Intelligent Diagnosis:** Automatic detection to identify whether the working status is normal or not after power on.

探头型号 Probe Model | L-2631H杆式(螺纹连接) L-2631H Rod Type (screw connection) |

-10~80度



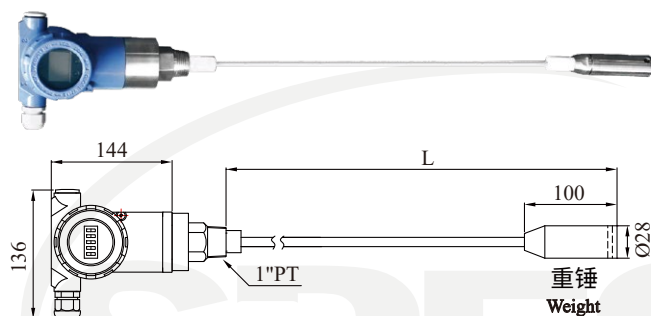
双棒探头 Double Rod Probe A2



适用于各种容器,可检测对SUS316L不锈钢无腐蚀性液体。

Applicable for various containers to measure liquids not corrosive to SUS316L stainless steel.

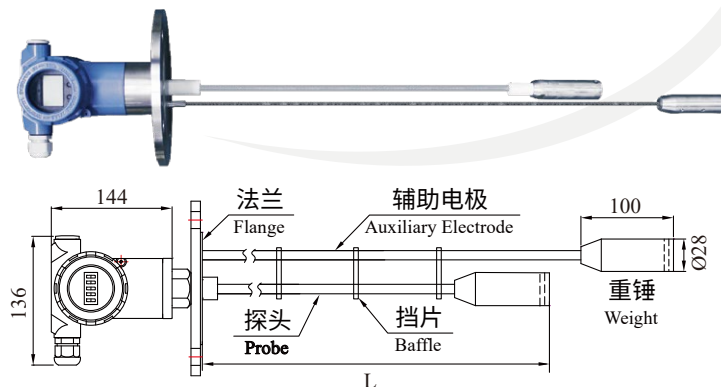
单缆标准探头 Standard Single Cable Probe B1



用于金属容器,可检测料位、液体,探头为Teflon涂层,抗腐蚀。建议使用于长度超过3米的应用中,如有搅拌,建议底部固定。

Applicable to measure the level of various liquids and solid materials in metal containers. The probe is Teflon coated and anti-corrosive. It is suggested for applications with a length of more than 3 meters. If there is stirring, it is suggested to fix the probe at the bottom.

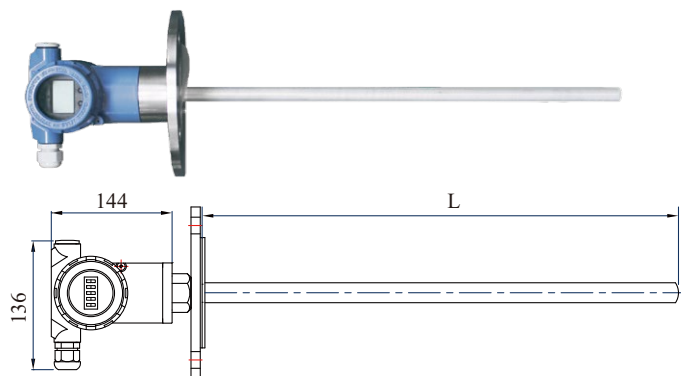
双缆标准探头 Standard Double Cable Probe B2



用于金属容器,可检测料位、液体,探头为Teflon涂层,抗腐蚀。建议使用于长度超过3米的应用中,如有搅拌,建议底部固定。

Applicable to measure the level of various liquids and solid materials in metal containers. The probe is Teflon coated and anti-corrosive. It is suggested for applications with a length of more than 3 meters. If there is stirring, it is suggested to fix the probe at the bottom.

单杆防腐探头 Anti-corrosive Single Rod Probe D2



用于各种容器,探头为Teflon被覆,抗腐蚀。建议检测导电液体。

Applicable for various containers. The probe is Teflon coated and anti-corrosive. It is suggested to measure conductive liquids.

L-2631H—□□—□□□□

防爆: Explosion-proof

Ex不选则无防爆 No explosion proof unless Ex is selected

温度: Temperature

N: 125°C T: 250°C H: 特殊高温 Special High Temperature

探头总长: Probe Length

用户自选, 杆式探头最长2.5米, 缆式探头最长30米

Self-selected by customer, max 2.5m for rod probe type, max 30m for cable prone length.

探头类型: Probe Type

A1. 单棒 Single Rod A2. 双棒 Double Rod B1. 单缆 Single Cable B2. 双缆 Double Cable

C1. 特殊高温 Special high Temperature D1. PP被覆 Coated with PP D2. PTFE被覆 Coated with PTFE

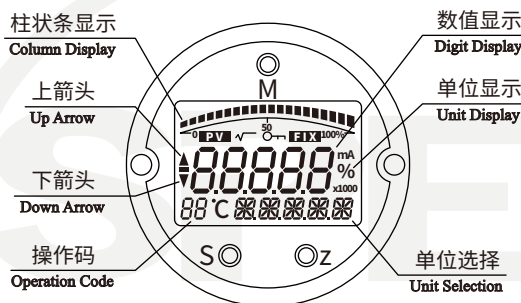
X. 特殊定制 Special Customization

连接方式: Connection Method

F: 法兰 Flange S: 螺纹 Screw C: 卡盘 Chuck X: 其他(详细规格需说明) others(Note for detailed specification)

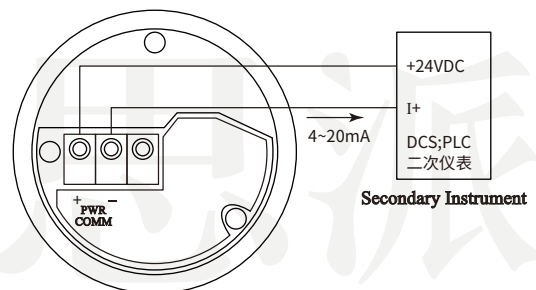
典型接线示意图

Typical Wiring Diagram



显示画面

Display Frame



产品正常安装在设备上及信号回路按照图示接好后, 必须根据实际物料的零点(低位)和满位(高位)高度, 对仪表进行零点(低位)和满位(高位)标定, 才能正常测量(标定和测量的物料必须是同一种物料)。

1. 探头刚刚接触到物料时, 为零位, 可进行零点(4mA)标定: 在正常显示时, 同时按下“M”+“S”键, 并保持3秒以上; 进入“标定零点”画面, 左下角显示操作码“9”, “数值显示”为零位的数值0, 按下S键, 向上箭头为闪烁状态, 再按下“M”键, 即完成零点标定; 同时左下角的操作码自动进入“10”(即满位标定画面), 此时左上角没有闪烁, 待实际物料满位时, 即可进行如下第2步满位标定。

2. 满位(20mA)标定: 当实际物料为, 满位时, 左下角显示操作码“10”, “数值显示”为满位的数值, 按下S键, 向上箭头闪烁, 再按下“M”键, 即完成满位(20mA)的标定; 同时左下角的操作码自动进入“0”(显示画面), 过10秒左右, 左下角操作码自动消失, 表头进入正常测量显示画面, 显示值即为当前测量的数值。

在实时正常显示状态(主变量显示状态), 按S键能更改显示设置: 常按S键, 显示会在“主变量”——“百分比”——“输出电流”之间循环显示, 右下角会显示操作码“30”。

当显示“主变量”时, 马上松开S键, 同时再快速按一下S键, 则只有“主变量”显示。

当显示“输出电流”时, 松开S键, 则“主变量”和“输出电流”循环显示。

当显示“百分比”时, 松开S键, 则“主变量”和“百分比”循环显示。

When the instrument is installed correctly on the equipment and the signal circuit is connected as shown in the diagram, the zero (low) position and full (high) position of the instrument must be calibrated according to the zero (low) position and full (high) position of the actual condition of material, so as to conduct normal measurement (the material calibrated and measured must be the same material).

1. When the probe is in contact with the material, it is in zero position and zero (4mA) calibration can be performed. When it is in normal display, press button M and S and keep it for more than 3 seconds; enter “calibrating zero position” screen, the lower left corner shows the operation code “9”, while “number display” is 0 in zero position; press button S, the up arrow is flashing, then press button M to finish zero position calibration; meanwhile, the operation code in the lower left corner automatically enters “10” (that’s the full position calibration screen). At this time, there is no flash in the upper left corner. When the actual material is in full position, the second step of full position calibration can be performed as follows.

2. Full position (20mA) calibration: when the actual material is in full position, the lower left corner shows the operation code “10”, while “number display” is the value in full position; press button S, the up arrow is flashing, press button M to finish full position calibration; meanwhile, the operation code in the lower left corner automatically enters “0” (display screen). About 10 seconds later, the operation code in the lower left corner automatically disappears, the meter enters the normal measurement display screen, and the display number is the current measured number.

In the real-time normal display status (master variable display status), press button S to change the display settings; press button S, the display switches between “master variable” —— “percentage” —— “output current”, and the lower right corner shows the operation code “30”.

When “master variable” is displayed, release button S immediately and press button S quickly at the same time, then only “master variable” displays.

When “percentage” is displayed, release button S, then the display switches between “master variable” and “percentage”.

When “output current” is displayed, release button S, then the display switches between “master variable” and “output current”.

安装指南 Installation Guide

为了使仪表可靠工作,控制器必须正确安装,下列图片将有助于识别安装是否正确。

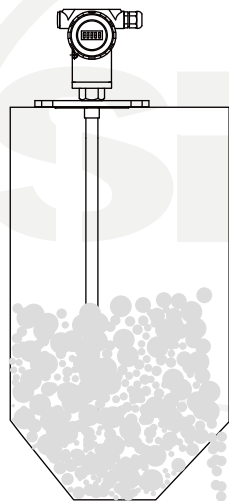
In order to make the instrument work more reliably, the controller must be installed correctly. The following diagrams help to identify whether the installation is correct.

食品或制药行业容器

Containers for Food and Pharmaceutical Industries

对于全绝缘测量电极可选棒式或缆式,测量不受介质密度,温度,过压,泡沫,介电常数和粘附因素的影响。

Rod type and cable type are available for fully insulated measuring electrode, and the measurements are not affected by the medium density, temperature, over-pressure, foam, dielectric constant and adhesion.

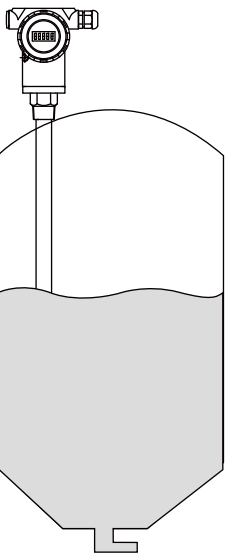


塑料和颗粒

Plastics and Particles

在化工行业中测量粉末、颗粒状的产品,由于介质不同或介质经常更换,故物位测量要求测量结果不受介质的特性变化,粉尘,介质堆角的影响。

It is applied to measure the powder or particles in chemical industry. As mediums are different or often replaced, the level measurement requires that the result is not affected by the change of the medium's characteristics, powder and medium accumulated at the corners.

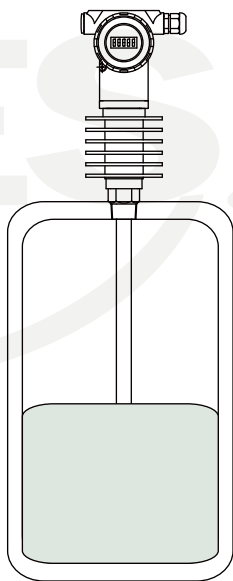


存储容器

Containers for Storage

可以用于测量储罐内的物位,传感器可以不带料进行调试,然后投入工作,如果被测介质的粘度小,而且介电常数也小,则可以选择同轴管式,通过同轴管式测量也可以满足高精度测量的要求,测量不受介质密度,温度,过压,泡沫,介电常数和粘附因素的影响。

The instrument can be used to measure material level in containers. The sensor can be adjusted without material and then put into work. If both the adhesion and dielectric constant of the measured medium are small, the coaxial valve type can be selected, which can also meet the requirement of high accuracy. Measurements are not affected by the medium density, temperature, over-pressure, foam, dielectric constant and adhesion.



测量管或旁通管

Measuring Pipe or By-pass

用于测量管或旁通管、管子侧面的连接件,以及用于混合介质的开孔或管子内的腐蚀都不影响测量,可以充分利用容器空间,提高测量精度。

The measurement is not affected by the connection used in measuring pipe, by-pass pipe and the side of the pipe, the opening for the mixed medium or the corrosion in the pipe, so that the space of the container can be fully utilized to improve the measurement accuracy.

