



2024年版

# 物位计选型样本

LEVEL METER CATALOGUE

安徽天康(集团)股份有限公司  
ANHUI TIANKANG (GROUP) SHARES CO.,LTD





# INNOVATION MAKES EXCELLENT

有 | 跨 | 越 | 才 | 有 | 卓 | 越



**安徽天康(集团)股份有限公司**  
ANHUI TIANKANG (GROUP) SHARES CO.,LTD





## 关于天康

- 长江宛如一条巨龙奔腾不息，在长江之滨的天长市有这样一颗璀璨的明珠——安徽天康（集团）股份有限公司，在经历了岁月的历练与洗礼后愈发闪耀夺目。

安徽天康（集团）股份有限公司创建于1974年，总部位于“长三角”经济圈核心区域一天长市，是中国民营企业制造业500强企业、中国电子信息百强企业、国家级守合同重信用企业、国家高新技术企业、安徽省依法纳税先进企业、银行资信AAA级企业、中国仪表行业十强企业、中国电线电缆十强企业、安徽省重点骨干企业、“全国五一劳动奖状”获得者等荣誉。

天康集团历经五十年的蓬勃发展，已形成集仪器仪表、光缆电缆、医疗医药、智能电气等跨行业、多元化的集团公司，下属子公司达二十余家。旗下产品凭借良好的质量与服务，被广泛应用于石油、电力、化工、通讯、卫生、新能源汽车及储能等行业和领域。

作为皖东经济最具活力与贡献的骨干企业之一，天康集团以“追求卓越，缔造满意”为目标，依托一流的产品、一流的管理、一流的服务，不仅在国内市场中赢得了广泛赞誉；在国际市场中，天康产品远销欧洲、非洲、亚洲等46个国家和地区。

天康集团在发展中逐步形成了独特的品牌文化及着眼全球的经营部局，全力塑造“高科技、高品质、国际化”的品牌形象。始终秉承“有跨越才有卓越”的天康精神，在创建和谐企业的基础上，引进国际先进的构架与模式，组织企业的生产经营管理体系。在积极参与国际化竞争的基础上，不断把握市场发展脉搏，寻求经济战略联盟，与全球伙伴共同发展与进步。如今天康人将全新的投入化为无私的奉献，与世界共同发展，与人类一起进步。



# 打造百年天康 拉动千亿产业

引领中国民族工业发展，成为技术领先与产品领先型企业，  
备受瞩目的国际化经营公司。





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# UHZ-50系列磁性液位计

## UHZ-50 Series Magnetic Liquid Level Gauge

### 产品概述

#### Product Overview

UHZ-50系列磁性液位计是一种浮球式金属管现场指示型液位计。该系列产品可以做到高密封、防泄漏和在高温、高压、高粘度、强腐蚀性条件下安全可靠地测量液位，全过程测量无盲区，显示醒目，读数直观，且测量范围大，配上液位报警、控制开关，可实现液位或界位的上、下限报警和控制，配上液位变送器，可将液位、界位信号转换成二线制4~20mA DC标准信号，实现远距离检测、指示、记录与控制。该系列产品广泛用于电力、石油、化工、冶金、环保、船舶、建筑、食品等各行业生产过程中的液位测量与控制。

The UHZ-50 series magnetic level gauge is a field-indicating liquid level gauge that utilizes a float inside a metal tube for accurate and real-time measurement and indication of liquid levels. It is specifically designed to provide reliable and precise measurements in various industrial applications. With its high sealing capabilities and leak-proof performance, the gauge ensures safe and accurate measurements even under challenging conditions such as high temperature, high pressure, high viscosity, and strong corrosive environments. The gauge offers a wide measurement range, eliminating blind spots and providing a clear and intuitive display for easy reading. It can be further enhanced with liquid level alarms, control switches, and level gauges to enable advanced monitoring, control, and signal conversion functionalities. Widely used in industries including power, petroleum, chemical, metallurgy, environmental protection, shipbuilding, construction, and food production, the UHZ-50 series magnetic level gauge is an essential tool for precise liquid level measurement and control applications.

### 产品原理

#### Product Principle

磁性液位计是根据浮力原理和磁性耦合作用原理工作的。当被测容器中的液位升降时，液位计主体管中浮子也随之升降。浮子内的永久磁钢通过磁耦合传递到现场指示器，驱动红、白翻柱翻转180°；当液位上升时，翻柱由白色转为红色，当液位下降时，翻柱由红色转为白色，指示器的红、白界位处为容器内介质液位的实际高度，从而实现液位的指示。

The Magnetic Liquid Level Gauge operates based on the principles of buoyancy and magnetic coupling. When the liquid level in the measured container rises or falls, the float inside the main tube of the gauge moves accordingly. The permanent magnet inside the float transfers its magnetic field through magnetic coupling to the field indicator, driving a red-white flip column to rotate by 180°. As the liquid level rises, the column changes from white to red, and as the liquid level falls, it changes from red to white. The red and white interface on the indicator represents the actual height of the liquid level in the container, providing an accurate indication of the liquid level.

### 产品特点

#### Product Features

- 1、适用于容器内液体介质的液位测量，除现场显示外，还可配远传变送器、液位控制器等功能；
- 2、显示直观醒目，可根据用户要求改变显示方向；
- 3、测量范围大，不受容器高度限制；
- 4、显示器组件与被测介质完全隔离，故密封性好，可靠安全；




- 5、结构简单，安装方便，维修简易；
- 6、耐腐蚀，防爆。

- 1.Suitable for measuring the liquid level of media inside containers, and can be equipped with additional functions such as remote transmission gauges and level controllers.
- 2.Offers a clear and prominent display, with the flexibility to adjust the display orientation based on user preferences.
- 3.Wide measurement range, without being restricted by container height.
- 4.Ensures reliable sealing and safety as the display components are fully isolated from the measured medium.
- 5.Simple structure, easy installation, and convenient maintenance.
6. Resistant to corrosion and designed to be explosion-proof.

## 产品信息

### Product Information

 <p>UHZ-50/C</p>	<p>测量范围：0-6000mm，特殊可定制            测量精度：±10mm            介质密度：≥0.35g/cm<sup>3</sup>            工作温度：-196~520℃            工作压力：-0.1~32MPa            介质黏度：≤0.4Pa.S            界位比重差：≥0.1g/cm<sup>3</sup>            材质：304、316L、PP、PVC、Ti、304+PTFE、316L+PTFE等            连接方式：法兰            防爆标志：ExdbIICT6 Gb                          ExialIICT6 Ga                          Extb IIICT80℃ Db</p>	<p>Measurement Range: 0-6000mm (special customization available)            Measurement Accuracy: ±10mm            Media Density: ≥0.35g/cm<sup>3</sup>            Operating Temperature: -196 to 520℃            Operating Pressure: -0.4~32MPa            Media Viscosity: ≤0.4Pa.S            Interface Density Difference: ≥0.1g/cm<sup>3</sup>            Materials: 304, 316L, PP, PVC, Ti, 304+PTFE, 316L+PTFE, and more            Connection Type: Flange            Explosion-proof Marking:            ExdbIICT6 Gb            ExialIICT6 Ga            Extb IIICT80℃ Db</p>
 <p>UHZ-50/D</p>	<p>测量范围：0-6000mm，特殊可定制            测量精度：±10mm            介质密度：≥0.35g/cm<sup>3</sup>            工作温度：-196~520℃            工作压力：-0.1~32MPa            介质黏度：≤0.4Pa.S            界位比重差：≥0.1g/cm<sup>3</sup>            材质：304、316L、PP、PVC、Ti、304+PTFE、316L+PTFE等            连接方式：法兰            防爆标志：ExdbIICT6 Gb                          ExialIICT6 Ga                          Extb IIICT80℃ Db</p>	<p>Measurement Range: 0-6000mm (special customization available) Measurement Accuracy: ±10mm            Media Density: ≥0.35g/cm<sup>3</sup>            Operating Temperature: -196 to 520℃            Operating Pressure: -0.1~32MPa            Media Viscosity: ≤0.4Pa.S            Interface Density Difference: ≥0.1g/cm<sup>3</sup>            Materials: 304, 316L, PP, PVC, Ti, 304+PTFE, 316L+PTFE, and more            Connection Type: Flange            Explosion-proof Marking:            ExdbIICT6 Gb            ExialIICT6 Ga            Extb IIICT80℃ Db</p>



选型指南

Selection Handbook

UHZ-50						
<div>安装方式</div> <div>Installation Method</div> <div>侧侧式C</div> <div>Side Mounting</div> <div>顶装式D</div> <div>Top Mounting</div> <div>其他安装方式Z</div> <div>Other Mounting Method</div>						
<div>主体管材质</div> <div>Main Tube Material</div> <div>3041</div> <div>316L2</div> <div>PVC3</div> <div>PP4</div> <div>304+PTFE5</div> <div>316L+PTFE6</div> <div>其他材质0</div> <div>Other materials</div>						
<div>显示器</div> <div>Display Panel</div> <div>铝合金面板L</div> <div>Aluminum alloy panel</div> <div>不锈钢面板Q</div> <div>Stainless Steel Panel</div> <div>磁敏电子双色面板24VDCC1</div> <div>Magnetic Sensitive Electronic Dual-Color Panel 24VDC</div> <div>磁敏电子双色面板220VACC2</div> <div>Magnetic Sensitive Electronic Dual-Color Panel 220VAC</div>						
<div>排污法兰</div> <div>Discharge Flange</div> <div>盲板法兰1</div> <div>Blind Flange</div> <div>带排污螺钉2</div> <div>Flange with Drain Screw</div> <div>带排污阀3</div> <div>Flange with Drain Valve</div>						



<b>配套仪表</b> <b>Supporting Instruments</b> 远传变送器 Remote Transmission gauge 磁致伸缩液位变送器 Magnetostrictive Level gauge 开关量输出 Switch Output 无配套仪表 Without supporting instruments	L  M  Q  W
<b>特殊结构</b> <b>Special Structure</b> 防霜式 Frost-proof Type 蒸汽夹套式 Steam Jacket Type 电伴热式 Electric Heat Tracing Type	01  02  03
<b>防爆形式</b> <b>Explosion Protection Type</b> 普通型 Ordinary Type 防爆型 Explosion-proof Type	P  D



# UHZ-50/S系列浮球液位计

## UHZ-50/S Series Magnetic Float Ball Level Gauge

### 产品概述

#### Product Overview

UHZ-50/S系列浮球液位计用于化工、电力、造纸、造船、环保、食品等行业。承压容器内介质的液位测量，用于地下槽、池，高层水箱的液位测量，更为简单、可靠，最为理想。浮球液位计的材质为不锈钢耐腐蚀，适用于易燃易爆的场所。

The UHZ-50/S series magnetic float ball level gauge is widely used in industries such as chemical, power, paper making, shipbuilding, environmental protection, and food. It is designed for liquid level measurement of media in pressurized vessels and is particularly suitable for underground tanks, pools, and high-rise water tanks. It offers simplicity, reliability, and is considered an ideal solution. The float level gauge is constructed with corrosion-resistant stainless steel, making it suitable for use in hazardous environments where flammable or explosive materials are present.

### 产品原理

#### Product Principle

浮球液位计的原理是主导管内装有一组干簧管和精密电阻，当管外带有环形磁钢的浮球因浮力随液位上下变化，相应的主导管内位于液面处的干簧管在磁场作用下依次闭合（接通）使回路电阻值发生变化，经专用模块转换成4-20mA DC电流输出。

The principle of the magnetic float ball level gauge involves a main tube containing a set of reed switches and precision resistors. As the float ball with an annular magnet attached to its outer surface moves up and down with the liquid level due to buoyancy, the corresponding reed switch located at the liquid level position in the main tube will close (turn on) under the influence of the magnetic field. This causes a change in the circuit resistance. The dedicated module converts this resistance change into a 4-20mA DC current output.

### 产品特点

#### Product Features

- 1、结构简单，可靠性高；
- 2、进口磁簧开关，使用寿命长；
- 3、适用于敞口或带压容器；
- 4、可用于液位或介面的测量与控制；
- 5、多种触液材质，适用于强腐蚀性液体；
- 6、开关控制器提供多种控制方案；
- 7、具有防爆性能，可用于危险场合；
- 8、多种安装形式可供选择。

- 1.Simple and reliable structure.
- 2.Imported magnetic reed switches with a long lifespan.
- 3.Suitable for both open and pressurized vessels.
- 4.Capable of measuring and controlling liquid levels or interfaces.



- 5.Available in a variety of wetted material options, suitable for corrosive liquids.
- 6.Switch controllers offer multiple control schemes.
- 7.Designed with explosion-proof capabilities, making it suitable for hazardous environments.
- 8.Offers a range of installation options to accommodate different requirements.

产品信息

Product Information

  <b>UHZ-50/S</b>	<p>测量范围：0-6000mm，特殊可定制 测量精度：±1.5%（L≥1000mm）， ±2.5%（L≤1000mm） 介质密度：≥0.3g/cm³ 工作温度：-40~120℃ 工作压力：-0.1~4MPa 介质黏度：≤0.4Pa.S 界位比重差：≥0.1g/cm³ 材质：304、316L、PP、Ti、304+PTFE、 316L+PTFE等 连接方式：螺纹/法兰 防爆标志：ExdbIICT6 Gb ExialI CT6 Ga Extb II CT80℃ Db</p>	<p>Measurement Range: 0-6000mm (special customization available) Measurement Measurement Accuracy: ±1.5% (length L ≥ 1000mm) ±2.5% (length L ≤ 1000mm) Media Density: ≥0.3g/cm³ Operating Temperature: -40 to 120℃ Operating Pressure: 1.0, 1.6MPa Media Viscosity: ≤0.4Pa.S Interface Density Difference: ≥0.1g/cm³ Materials: 304, 316L, PP, Ti 304+PTFE, 316L+PTFE, and more Connection Type: Threaded; Flanged Explosion-proof Marking: ExdbIICT6 Gb ExialI CT6 Ga Extb II CT80℃ Db</p>
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产品选型

Product Information

<b>UHZ-50/S</b>				
<p><b>显示类型</b> <b>Display Type</b> 带显示 B With display Panel 不带显示 X Without display Panel</p>				



<div>接液材质</div> <div>Wetted Material</div> <div>3041</div> <div>316L2</div> <div>PVC3</div> <div>PP4</div> <div>304+PTFE5</div> <div>316L+PTFE6</div> <div>其他材质0</div> <div>Other material</div>	
<div>电气接口</div> <div>Electrical Interface</div> <div>M20*1.5</div> <div>1/2NPT</div> <div>特殊定制</div> <div>Special customization</div>	<div>M</div> <div>N</div> <div>X</div>
<div>输出信号</div> <div>Output Signal</div> <div>4-20mA</div> <div>4-20mA+ HART</div>	<div>1</div> <div>2</div>
<div>防爆形式</div> <div>Explosion Protection Type</div> <div>普通型</div> <div>Ordinary Type</div> <div>防爆型</div> <div>Explosion-proof type</div>	<div>P</div> <div>D</div>



# UQK-00系列侧装浮球液位开关

## UQK-00 Series Side-mounted float ball level switch

### 产品概述

#### Product Overview

UQK-00系列浮球液位开关适用于对各种容器内液体的液位控制，当液位到达上、下切换值时，控制器触点发出通断开关式信号。

The UQK-00 series float ball level switch is suitable for liquid level control of various fluids inside containers. When the liquid level reaches the upper or lower switching value, the controller's contact emits an on/off switch-type signal.

### 产品原理

#### Product Principle

侧装浮球液位开关的工作原理是当浮球在液体浮力的作用下随液位的上升或下降而沿固定支点（轴）上下摆动时，浮球固定杆末端的磁钢在杠杆的作用下也随之摆动，从而驱动接线盒内的微动开关动作，并输出（NO）或关（OFF）的信号，供报警提示或远程控制使用。

The working principle of a side-mounted float ball level switch is as follows: when the float ball is buoyed by the liquid and moves up or down along a fixed pivot (axis) with the liquid level, the magnetic steel at the end of the float ball's fixed rod also swings under the action of a lever. This movement drives the micro switch inside the junction box to actuate, thereby outputting a normally open (NO) or closed (OFF) signal for alarm indication or remote control purposes.

### 产品信息

#### Product Information

 <p>UQK-01</p>	<p>测量精度：±0.05m 触点容量：250VAC/3A 工作温度：-30~300℃ 工作压力：≤2.5MPa 材质：304、316L等 连接方式：螺纹/法兰</p>	<p>Measurement Accuracy: ±0.05m Contact Capacity: 250VAC/3A Operating Temperature: -30~300℃ Operating Pressure: ≤2.5MPa Material: 304, 316L, etc. Connection Type: Thread/Flange</p>
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  UQK-02	测量精度：±0.05m 触点容量：250VAC/3A 工作温度：-30~300℃ 工作压力：≤2.5MPa 材质：304、316L等 连接方式：螺纹/法兰	Measurement Accuracy: ±0.05m Contact Capacity: 250VAC/3A Operating Temperature: -30~300℃ Operating Pressure: ≤2.5MPa Material: 304, 316L, etc. Connection Type: Thread/Flange
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选型指南

Selection Handbook

UQK			
类型 Type 不可调节 Non-adjustable 可调节 Adjustable	01  02		
接液材质 Wetted Material 304 316L 其他材质 Other material		1 2 0	
安装方式 Installation Method G2螺纹 G2 Thread DN50法兰 DN50 Flange 其他 Other			L F Z



# UQK-50系列浮球液位开关

## UQK-50 Series float ball level switch

### 产品概述

#### Product Overview

UQK-50系列浮球液位开关是一种结构简单、使用方便、安全可靠的液位控制器。它比一般机械开关速度快、工作寿命长；与电子开关相比，它又有抗负载冲击能力强的特点，一只产品可以实现多点控制。其在造船、造纸、印刷、发电机设备、石油化工、食品工业、水处理、电工、染料工业、油压机械等方面都得到了广泛的应用。

The UQK-50 series float level switch is a simple, convenient, safe and reliable level controller. It has a faster speed and longer working life than ordinary mechanical switches; Compared with electronic switches, it also has strong resistance to load shock, and a single product can achieve multi-point control. It has been widely used in shipbuilding, papermaking, printing, generator equipment, petrochemical industry, food industry, water treatment, electrical engineering, dye industry, hydraulic machinery, and other fields.

### 产品原理

#### Product Principle

浮球液位开关的工作原理是在密闭的非导磁性管内安装有一个或多个干簧管，然后将此管穿过一个或多个中空且内部有环形磁铁的浮球，液体的上升或下降将带动浮球一起上下移动，从而使该非导磁性管内的干簧管产生吸合或断开的动作，从而输出一个开关信号。

The working principle of a float level switch is to install one or more dry reed tubes inside a closed non magnetic tube, and then pass this tube through one or more hollow floating balls with circular magnets inside. The rise or fall of the liquid will drive the floating balls to move up and down together, causing the dry reed tubes inside the non magnetic tube to engage or disconnect, thereby outputting a switch signal.

### 产品特点

#### Product Features

- 1、适用范围广、安装形式多样；
  - 2、多点控制；
  - 3、无源器件，性能稳定可靠，抗干扰能力强，结构简单，安装方便，维护费用低；
  - 4、多种材质可以选择，适合多种场合使用。
1. Wide application range and diverse installation forms;
  2. Multi point control;
  3. Passive device, stable and reliable performance, strong anti-interference ability, simple structure, easy installation, and low maintenance cost;
  4. Multiple materials can be selected, suitable for various occasions.



产品信息

Product Information

 UQK-50	<p>测量精度：±10mm 触点容量：250VAC/1A 工作温度：-30~150℃ 工作压力：≤2.5MPa 材质：304、316L、304+PTFE、 316L+PTFE等 连接方式：螺纹/法兰</p>	<p>Measurement Accuracy: ±10mm Contact Capacity: 250VAC/1A Operating Temperature: -30~150℃ Operating Pressure: ≤2.5MPa Material: 304, 316L, etc. Connection Type: Thread/Flange</p>
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选型指南

Selection Handbook

UQK-50				
<b>控制点数</b> <b>Control Points</b>				
单点	1			
Single Point				
2点	2			
Two Points				
3点	3			
Three Points				
其他	Z			
Other				
<b>接液材质</b> <b>Wetted Material</b>				
304	1			
316L	2			
304+PTFE	3			
316L+PTFE	4			
其他材质	0			
Other material				
<b>电气接口</b> <b>Electrical Entry</b>				
M20*1.5		M		
1/2NPT		N		
特殊定制		X		
Special customization				
<b>防爆形式</b> <b>Explosion Protection Type</b>				
普通型		P		
Ordinary Type				
防爆型		D		
Explosion-proof Type				



# UQK-60系列电缆式浮球液位开关

## UQK-60 Series Cable Float Ball Level Switch

### 产品概述

#### Product Overview

UQK-60系列电缆式浮球液位开关利用重力与浮力的原理设计而成，结构简单而合理，主要包括浮漂体，设置在浮漂体内的大容量微型开关和能将开关处于通断状态的驱动机构，以及与开关相连的三芯电缆。该产品的显著特点是性能稳定可靠（不因液面的波动而引起误动作），同时它还具有无毒、耐腐蚀、安装方便、价格低廉、使用寿命长等特点。该产品可与各种液泵配套，广泛用于给水、排水及含腐蚀性液体的液位自动控制。

The UQK-60 series cable float ball level switch is designed based on the principles of gravity and buoyancy. It consists of a float, a high-capacity micro switch housed inside the float, a driving mechanism that controls the switch's on/off state, and a three-core cable connected to the switch. This product is characterized by its stable and reliable performance, immune to false triggering caused by liquid level fluctuations. It also offers non-toxicity, corrosion resistance, easy installation, affordability, and a long service life. The cable float ball level switch is commonly used in conjunction with various types of liquid pumps and finds wide application in water supply, drainage, and automatic level control systems for corrosive liquids.

### 产品原理

#### Principle

电缆式浮球液位开关是利用微动开关或水银开关做接点零件，当电缆浮球以重锤为原点上扬一定角度时，开关便会有ON或OFF信号输出。

The cable float ball level switch operates based on a micro switch or mercury switch as the contact component. When the cable float rises to a certain angle with the weight as the reference point, the switch will output an ON or OFF signal.

### 产品信息

#### Product Information

 <p>UQK-60</p>	<p>控制范围：0-10000mm，特殊可定制 控制精度：±0.05m 触点容量：AC250V/10A 工作温度：-20~160℃ 工作压力：≤1.0MPa 材质：工程塑料、304、316L 连接方式：法兰或其他方式</p>	<p>Control Range: 0-10000mm, (special customization available) Control Accuracy: ±0.05m Contact Capacity: AC250V/10A Operating Temperature: -20~160℃ Operating Pressure: ≤1.0MPa Materials: Engineering plastic, 304, 316L Connection Type: Flange or other options</p>
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产品选型

Product Information

UQK-60		
<div>控制点数 Control Points</div> <div>单点 Single Point</div> <div>2点 Two Points</div> <div>3点 Three Points</div> <div>其他 Other</div>	<div>1</div> <div>2</div> <div>3</div> <div>Z</div>	
<div>接液材质 Wetted Material</div> <div>工程塑料 Engineering Plastic</div> <div>304</div> <div>316L</div>	<div>A</div> <div>B</div> <div>C</div>	
<div>接线盒 Junction Box</div> <div>带 With</div> <div>不带 Without</div>		<div>Y</div> <div>N</div>



# TKWL-1100系列26GHz高频雷达物位计

## TKWL-1100 Series 26GHz High-Frequency Radar Level Gauge

### 产品概述

#### Product Overview

TKWL-1100系列26GHz高频雷达物位计，输出4~20mA模拟信号，测量最大距离可达70m。天线被进一步优化处理，新型的快速的微处理器可以进行更高速率的信号分析处理，使得仪表可以用于：反应釜或固体料仓非常复杂的测量条件。

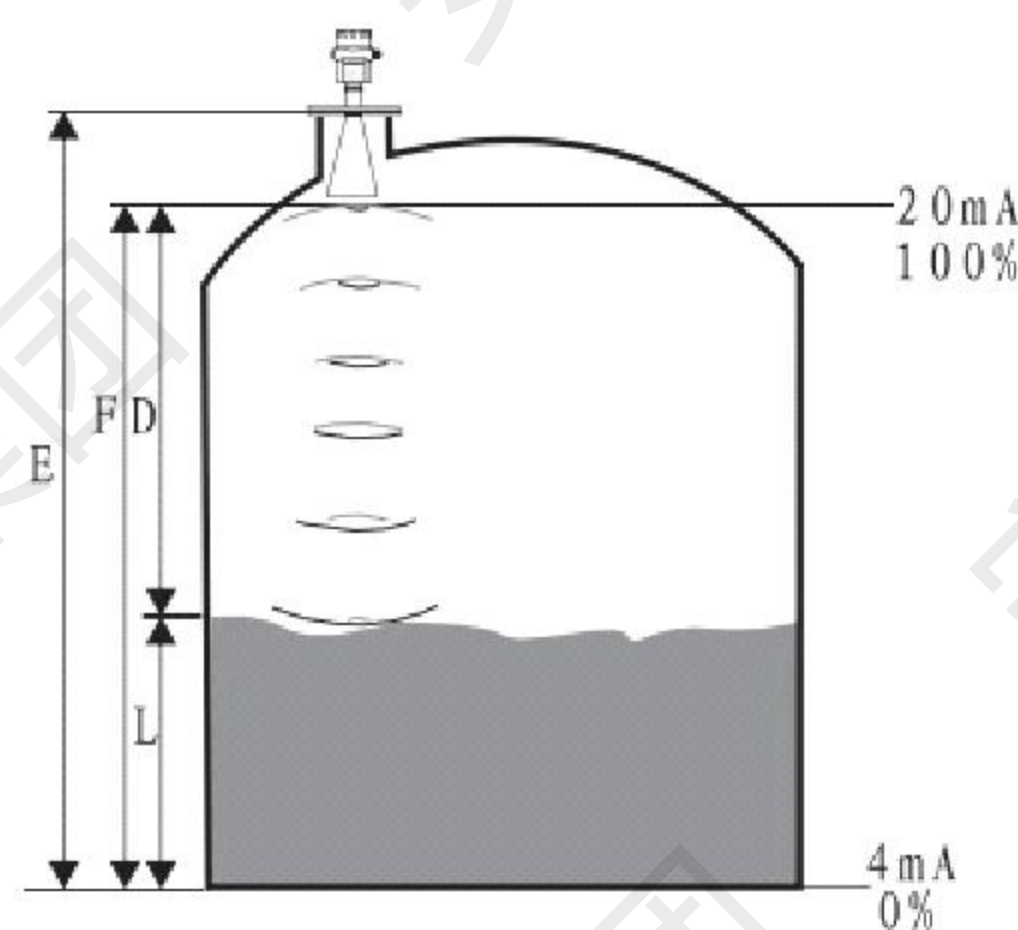
The TKWL-1100 series 26GHz high-frequency radar level gauge is designed to provide a 4-20mA analog output signal and can measure distances up to 70m. The antenna is optimized for improved performance, and the advanced microprocessor enables high-speed signal analysis, making the instrument suitable for measuring under complex conditions in reactors or solid material silos.

### 产品原理

#### Product Principle

雷达物位计天线发射极窄的微波脉冲，这个脉冲以光速在空间传播，遇到被测介质表面，其部分能量被反射回来，被同一天线接收。发射脉冲与接收脉冲的时间间隔与天线到被测介质表面的距离成正比。雷达物位计采用一种特殊的相关解调技术，可以准确识别发射脉冲与接收脉冲的时间间隔，从而进一步计算出天线到被测介质表面的距离。

The radar level gauge antenna emits narrow microwave pulses, which propagate at the speed of light in space. When these pulses encounter the surface of the measured medium, a portion of the energy is reflected back and received by the same antenna. The time interval between the transmitted and received pulses is directly proportional to the distance between the antenna and the surface of the measured medium. The radar level gauge uses a special correlation demodulation technique to accurately identify the time interval between the transmitted and received pulses, thereby further calculating the distance from the antenna to the surface of the measured medium.



### 产品特点

#### Product Features

雷达物位计采用了高达26GHz的发射频率，因而具有以下特点：

- 1、非接触式测量，无磨损，无污染；
- 2、天线尺寸小，便于安装；
- 3、波长短，对在倾斜的固体表面有更好的反射；
- 4、几乎不受大气中水蒸气、温度和压力变化影响；
- 5、严重粉尘环境仪表也能准确读取到真实物位回波；
- 6、高信噪比，即使在波动的情况下也能获得更优的性能。



The radar level gauge, operating at a frequency of up to 26GHz, exhibits the following characteristics:

- 1.Non-contact measurement, no wear and tear, no contamination.
- 2.Small antenna size, facilitating easy installation.
- 3.Short wavelength, providing better reflection on inclined solid surfaces.
- 4.Minimal influence from changes in atmospheric water vapor, temperature, and pressure.
- 5.Capable of accurately reading true level echoes even in severely dusty environments.
- 6.High signal-to-noise ratio, delivering superior performance even under fluctuating conditions.

## 产品信息

### Product Information

 <p><b>TKWL-1101</b></p>	<p>应用：液体 适合强腐蚀性液体            测量范围：0-10m            测量精度：±3mm            过程温度：-40~120℃            过程压力：-0.1~0.3MPa            频率：26GHz            输出信号：4-20mA/HART/Modbus            电源：两线制（DC24V）            四线制（DC24V/AC220V）            现场显示：标配            过程连接：螺纹/法兰/支架            天线：棒式天线            防爆标志：ExdbIICT6 Gb                          ExialIICT6 Ga                          ExdbIIIBT4 Gb                          Extb IIICT80℃ Db</p>	<p>Application: Suitable for measuring corrosive liquids            Measurement Range: 0-10m            Measurement Accuracy: ±3mm            Process Temperature: -40~120℃            Process Pressure: -0.10.3MPa            Frequency: 26GHz            Output Signal: 4-20mA/HART/Modbus            Power Supply: Two-wire (DC24V), Four-wire (DC24V/AC220V)            Field Display: Included as standard            Process Connection: Thread/Flange/Bracket            Antenna: Rod antenna            Explosion-proof Marking:ExdbIICT6 Gb                                              ExialIICT6 Ga                                              ExdbIIIBT4 Gb                                              Extb IIICT80℃ Db</p>
 <p><b>TKWL-1102</b></p>	<p>应用：液体 耐温、耐压、轻微腐蚀的液体            测量范围：0-70m            测量精度：±3mm            过程温度：-40~120℃/-40~250℃            过程压力：-0.1~4.0MPa            频率：26GHz            输出信号：4-20mA/HART/Modbus            电源：两线制（DC24V）            四线制（DC24V/AC220V）            现场显示：标配            过程连接：法兰/支架            天线：喇叭天线            防爆标志：ExdbIICT6 Gb                          ExialIICT6 Ga                          ExdbIIIBT4 Gb                          Extb IIICT80℃ Db</p>	<p>Application: Liquids, suitable for temperature-resistant, pressure-resistant, and mildly corrosive liquids            Measurement Range: 0-70m            Measurement Accuracy: ±3mm            Process Temperature: -40~120℃/-40~250℃            Process Pressure: -0.1~4.0MPa            Frequency: 26GHz            Output Signal: 4-20mA/HART/Modbus Power Supply: Two-wire (DC24V) / Four-wire (DC24V/AC220V)            Field Display: Included as standard            Process Connection: Flange/Bracket            Antenna: Horn antenna            Explosion-proof Marking: ExdbIICT6 Gb                                              ExialIICT6 Ga                                              ExdbIIIBT4 Gb                                              Extb IIICT80℃ Db</p>



 <p>TKWL-1103</p>	<p>应用：液体 卫生型液体，强腐蚀性液体            测量范围：0-30m            测量精度：±3mm            过程温度：-40~120℃/-40~250℃            过程压力：-0.1~4.0MPa            频率：26GHz            输出信号：4-20mA/HART/Modbus            电源：两线制（DC24V）            四线制（DC24V/AC220V）            现场显示：标配            过程连接：法兰            天线：平面天线            防爆标志：ExdbIICT6 Gb                              ExialICT6 Ga                              ExdbIIBT4 Gb                              Extb IIICT80℃ Db</p>	<p>Application: Liquids, suitable for sanitary fluids and highly corrosive liquids            Measurement Range: 0-30m            Measurement Accuracy: ±3mm            Process Temperature: -40~120℃/-40~250℃            Process Pressure: -0.1~4.0MPa            Frequency: 26GHz            Output Signal: 4-20mA/HART/Modbus Power Supply: Two-wire (DC24V) / Four-wire (DC24V/AC220V)            Field Display: Included as standard            Process Connection: Flange            Antenna: Planar antenna            Explosion-proof Marking: ExdbIICT6 Gb                                              ExialICT6 Ga                                              ExdbIIBT4 Gb                                              Extb IIICT80℃ Db</p>
 <p>TKWL-1105</p>	<p>应用：固体 强粉尘易结晶、结露场合            测量范围：0-70m            测量精度：±15mm            过程温度：-40~120℃/-40~250℃            过程压力：-0.1~4.0MPa            频率：26GHz            输出信号：4-20mA/HART/Modbus            电源：两线制（DC24V）            四线制（DC24V/AC220V）            现场显示：标配            过程连接：法兰            天线：喇叭天线            防爆标志：ExdbIICT6 Gb                              ExialICT6 Ga                              ExdbIIBT4 Gb                              Extb IIICT80℃ Db</p>	<p>Application: Solids, suitable for environments with heavy dust, easy crystallization, and condensation            Measurement Range: 0-70m            Measurement Accuracy: ±15mm            Process Temperature: -40~120℃/-40~250℃            Process Pressure: -0.1~4.0MPa            Frequency: 26GHz            Output Signal: 4-20mA/HART/Modbus Power Supply: Two-wire (DC24V) / Four-wire (DC24V/AC220V)            Field Display: Included as standard            Process Connection: Flange            Antenna: Horn antenna            Explosion-proof Marking: ExdbIICT6 Gb                                              ExialICT6 Ga                                              ExdbIIBT4 Gb                                              Extb IIICT80℃ Db</p>
 <p>TKWL-1106</p>	<p>应用：固体 过程容器或强粉尘易结晶、结露场合            测量范围：0-70m            测量精度：±15mm            过程温度：-40~150℃            过程压力：-0.1~4.0MPa            频率：26GHz            输出信号：4-20mA/HART/Modbus            电源：两线制（DC24V）            四线制（DC24V/AC220V）            现场显示：标配            过程连接：法兰            天线：抛物面天线            防爆标志：ExdbIICT6 Gb                              ExialICT6 Ga                              ExdbIIBT4 Gb                              Extb IIICT80℃ Db</p>	<p>Application: Solids, suitable for process vessels or environments with heavy dust, easy crystallization, and condensation            Measurement Range: 0-70m            Measurement Accuracy: ±15mm            Process Temperature: -40~150℃            Process Pressure: -0.1~4.0MPa            Frequency: 26GHz            Output Signal: 4-20mA/HART/Modbus Power Supply: Two-wire (DC24V) / Four-wire (DC24V/AC220V)            Field Display: Included as standard            Process Connection: Flange            Antenna: Parabolic antenna            Explosion-proof Marking: ExdbIICT6 Gb                                              ExialICT6 Ga                                              ExdbIIBT4 Gb                                              Extb IIICT80℃ Db</p>



选型指南

Selection Handbook

TKWL-1101					
<div>电气接口</div> <div>Electrical Entry</div> <div>M20*1.5</div> <div>1/2NPT</div> <div>特殊定制</div> <div>Customized</div>	<div>M</div> <div>N</div> <div>X</div>				
<div>外壳材质</div> <div>Enclosure Material</div> <div>铸铝</div> <div>Aluminum</div> <div>不锈钢</div> <div>Stainless Steel</div>		<div>L</div> <div>Q</div>			
<div>电子组件</div> <div>Electronic Components</div> <div>4-20mA/HART/24V DC 两线制</div> <div>4-20mA/HART/24V DC Two-wire</div> <div>4-20mA/HART/24V DC 四线制</div> <div>4-20mA/HART/24V DC Four-wire</div> <div>4-20mA/HART /220V AC四线制</div> <div>4-20mA/HART/220V AC Four-wire</div> <div>特殊定制</div> <div>Customized</div>			<div>A</div> <div>B</div> <div>C</div> <div>X</div>		
<div>天线规格</div> <div>Antenna Specifications</div> <div>100mm</div> <div>200mm</div> <div>特殊定制</div> <div>Customized</div>				<div>1</div> <div>2</div> <div>X</div>	
<div>安装方式</div> <div>Installation Method</div> <div>G1-1/2螺纹</div> <div>G1-1/2 Threaded</div> <div>DN50法兰</div> <div>DN50 Flange</div>				<div>A</div> <div>B</div>	



DN65法兰	C	
DN65 Flange		
DN80法兰	D	
DN80 Flange		
DN100 法兰	E	
DN100 Flange		
DN125法兰	F	
DN125 Flange		
DN150法兰	G	
DN150 Flange		
其它	Z	
Other		
<b>防爆形式</b> <b>Explosion Protection Type</b> 普通型 Ordinary Type 防爆型 Explosion-proof Type		
		P
		D



TKWL-1102								
<div>电缆接口</div> <div>Electrical Entry</div> <div>M20*1.5M</div> <div>1/2NPTN</div> <div>特殊定制X</div> <div>Customized</div>								
<div>外壳材质</div> <div>Enclosure Material</div> <div>铸铝L</div> <div>Aluminum</div> <div>不锈钢Q</div> <div>Stainless Steel</div>								
<div>电子组件</div> <div>Electronic Components</div> <div>4-20mA/HART/24V DC 两线制A</div> <div>4-20mA/HART/24V DC Two-wire</div> <div>4-20mA/HART/24V DC 四线制B</div> <div>4-20mA/HART/24V DC Four-wire</div> <div>4-20mA/HART /220V AC四线制C</div> <div>4-20mA/HART/220V AC 4-wire</div> <div>特殊定制X</div> <div>Customized</div>								
<div>密封温度</div> <div>Sealing Temperature</div> <div>普通密封-40-120℃P</div> <div>Standard sealing -40-120℃</div> <div>高温密封-40-250℃带散热器G</div> <div>High-temperature sealing -40-250℃ with radiator</div>								
<div>天线规格</div> <div>Antenna Specifications</div> <div>喇叭天线Φ44mmTA</div> <div>Horn Antenna Φ44mm</div> <div>喇叭天线Φ78mmTB</div> <div>Horn Antenna Φ78mm</div> <div>喇叭天线Φ96mmTC</div> <div>Horn Antenna Φ96mm</div> <div>喇叭天线Φ121mmTD</div> <div>Horn Antenna Φ121mm</div> <div>特殊定制TX</div> <div>Customized</div>								



<b>天线材质</b> <b>Antenna Material</b> 304 316L 304衬四氟 304 Stainless Steel lined with PTFE 316L衬四氟 316L Stainless Steel lined with PTFE 特殊定制 Customized	1 2 3 4 X
<b>过程连接</b> <b>Process Connection</b> DN50法兰 DN50 Flange DN80法兰 DN80 Flange DN100法兰 DN100 Flange DN150法兰 DN150 Flange 其他 Other	A B C D Z
<b>防爆形式</b> <b>Explosion Protection Type</b> 普通型 Ordinary Type 防爆型 Explosion-proof Type	P D



TKWL-1103						
<div><div>电气接口</div><div>Electrical Entry</div><div>M20*1.5</div><div>M</div><div>1/2NPT</div><div>N</div><div>特殊定制</div><div>X</div><div>Customized</div></div>						
<div><div>外壳材质</div><div>Shell Material</div><div>铸铝</div><div>L</div><div>Aluminum</div><div>Q</div><div>不锈钢</div><div>Stainless Steel</div></div>						
<div><div>电子组件</div><div>Electronic Components</div><div>4-20mA/HART/24V DC 两线制</div><div>A</div><div>4-20mA/HART/24V DC 2-wire</div><div></div><div>4-20mA/HART/24V DC 四线制</div><div>B</div><div>4-20mA/HART/24V DC 4-wire</div><div></div><div>4-20mA/HART /220V AC四线制</div><div>C</div><div>4-20mA/HART/220V AC 4-wire</div><div></div><div>特殊定制</div><div>X</div><div>Special Customization</div></div>						
<div><div>密封温度</div><div>Sealing Temperature</div><div>普通密封-40-120℃</div><div>P</div><div>Standard Seal -40-120℃</div><div></div><div>高温密封-40-250℃带散热器</div><div>G</div><div>High-Temperature Seal -40-250℃ with Heat Sink</div></div>						
<div><div>天线材料/过程连接</div><div>Antenna Material/Process Connection</div><div>不锈钢复合PTFE法兰 DN50</div><div>A</div><div>Stainless Steel Composite PTFE Flange DN50</div><div></div><div>不锈钢复合PTFE法兰 DN65</div><div>B</div><div>Stainless Steel Composite PTFE Flange DN65</div><div></div><div>不锈钢复合PTFE法兰 DN80</div><div>C</div><div>Stainless Steel Composite PTFE Flange DN80</div><div></div><div>不锈钢复合PTFE法兰 DN100</div><div>D</div><div>Stainless Steel Composite PTFE Flange DN100</div><div></div><div>不锈钢复合PTFE法兰 DN125</div><div>E</div><div>Stainless Steel Composite PTFE Flange DN125</div><div></div><div>不锈钢复合PTFE法兰 DN150</div><div>F</div><div>Stainless Steel Composite PTFE Flange DN150</div><div></div><div>其它</div><div>Z</div><div>Others</div></div>						



防爆形式

Explosion Protection Type

普通型

Ordinary Type

防爆型

Explosion-proof Type

P

D



TKWL-1105								
<div>电气接口</div> <div>Electrical Entry</div> <div>M20*1.5M</div> <div>1/2NPTN</div> <div>特殊定制X</div> <div>Customized</div>								
<div>外壳材质</div> <div>Shell Material</div> <div>铸铝L</div> <div>Aluminum</div> <div>不锈钢Q</div> <div>Stainless Steel</div>								
<div>电子组件</div> <div>Electronic Components</div> <div>4-20mA/HART/24V DC 两线制A</div> <div>4-20mA/HART/24V DC Two-wire</div> <div>4-20mA/HART/24V DC 四线制B</div> <div>4-20mA/HART/24V DC Four-wire</div> <div>4-20mA/HART /220V AC四线制C</div> <div>4-20mA/HART/220V AC Four-wire</div> <div>特殊定制X</div> <div>Special Customization</div>								
<div>密封温度</div> <div>Sealing Temperature</div> <div>普通密封-40-120℃P</div> <div>Normal Temperature Seal -40-120℃</div> <div>高温密封-40-250℃带散热器G</div> <div>High-Temperature Seal -40-250℃ with Heat Sink</div>								
<div>吹扫接口</div> <div>Purge Interface</div> <div>带1</div> <div>With</div> <div>不带2</div> <div>Without</div>								



<b>天线规格</b> <b>Antenna Specifications</b> 喇叭天线Φ44 Horn Antenna Φ44 喇叭天线Φ78 Horn Antenna Φ78 喇叭天线Φ96 Horn Antenna Φ96 喇叭天线Φ121 Horn Antenna Φ121 特殊定制 Special Customization	TA  TB  TC  TD  TX
<b>安装方式</b> <b>Installation Method</b> DN80法兰 DN80 Flange DN100法兰 DN100 Flange DN125法兰 DN125 Flange DN150法兰 DN150 Flange 其他 Other	A  B  C  D  Z
<b>防爆形式</b> <b>Explosion Protection Type</b> 普通型 Ordinary Type 防爆型 Explosion-proof Type	P  D



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# TKWL-1300系列导波雷达物位计

## TKWL-1300 Series Guided Wave Radar Level Gauge

### 产品概述

#### Product Overview

TKWL-1300系列导波雷达物位计输出4~20mA模拟信号，测量最大距离可达30米。天线被进一步优化处理，新型的快速的微处理器可以进行更高速率的信号分析处理，使得仪表可以用于高温，蒸汽大的罐体，或固体料仓等非常复杂的测量工况。

The TKWL-1100 series 26GHz high-frequency radar level gauge is designed to provide a 4-20mA analog output signal and can measure distances up to 70m. The antenna is optimized for improved performance, and the advanced microprocessor enables high-speed signal analysis, making the instrument suitable for measuring under complex conditions in reactors or solid material silos.

### 产品原理

#### Product Principle

导波雷达是基于时间行程原理的测量仪表，雷达波以光速运行，运行时间可以通过电子部件被转换成物位信号。探头发高频脉冲并沿缆式或杆式探头传播，当脉冲遇到物料表面时反射回来被仪表内的接收器接收，并将距离信号转化为物位信号。

反射的脉冲信号沿缆式或杆式探头传导至仪表电子线路部分，微处理器对此信号进行处理，识别出微波脉冲在物料表面所产生的回波。正确的回波信号识别由脉冲软件完成，距离物料表面的距离D与脉冲的时间行程T成正比：

**$D = C \times T / 2$  其中C为光速**

因空罐的距离E已知，则物位L为： $L = E - D$

通过输入空罐高度E（=零点），满罐高度F（=满量程）及一些应用参数来设定，应用参数将自动使仪表适应测量环境，对应于4 - 20mA输出。

F——测量范围，E——空罐距离B——顶部盲区，L——探头到罐壁的最小距离

顶部盲区是指物料最高料面与测量参考点之间最小距离。

底部盲区是指缆绳最底部附近无法精确测量的一段距离。

顶部盲区和底部盲区之间是有效测量距离。

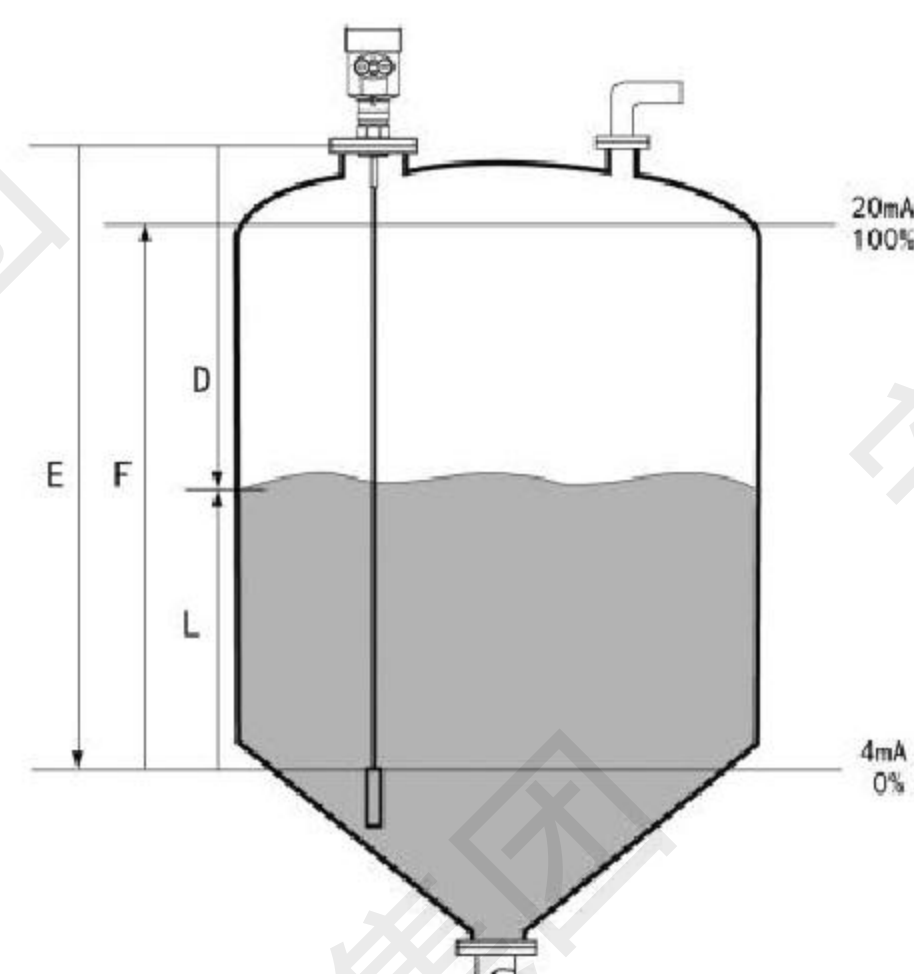
注意：只有物料处于顶部盲区和底部盲区之间时，才能保证罐内物位的可靠测量。

Guided wave radar is a measurement instrument based on the principle of time of flight. Radar waves travel at the speed of light, and the travel time can be converted into a level signal through electronic components. The probe emits high-frequency pulses and propagates along a cable or rod probe. When the pulse encounters the material surface, it is reflected back and received by the receiver inside the instrument, which converts the distance signal into a level signal.

The reflected pulse signal is conducted to the electronic circuitry of the instrument through the cable or rod probe. The microprocessor processes this signal and identifies the echo generated by the microwave pulse on the material surface. The identification of the correct echo signal is performed by pulse software. The distance D to the material surface is directly proportional to the time of flight T of the pulse:

$D = C \times T / 2$ , where C is the speed of light.

Given the distance E to the empty tank, the level L is calculated as:  $L = E - D$ .





By inputting the empty tank height E (zero point) and the full tank height F (full range), as well as some application parameters, the instrument can be set. The application parameters automatically adapt the instrument to the measurement environment, corresponding to the 4-20mA output.

F-Measurement range, E - Distance to the empty tank

B-Top dead zone , L-Minimum distance from the probe to the tank wall

The top dead zone refers to the minimum distance between the highest material level and the measurement reference point.

The bottom dead zone refers to a section near the bottom of the cable where accurate measurements cannot be made.

The effective measurement distance is between the top dead zone and the bottom dead zone.

Note: Only when the material is between the top dead zone and the bottom dead zone, reliable measurement of the tank level can be guaranteed.

产品特点

Product Features

- 1、运用时间行程原理，不受蒸汽、粉尘、泡沫等影响；

2、采用了先进的微处理器和独特的EchoDiscovery回波处理技术；

3、采用接触式杆式或缆式天线传导信号，受干扰影响小，可测量复杂工况，如高温、高压及小介电常数介质；

4、坚固的模块化设计，操作简单，使用降低运行维护成本，提高了安全型；

5、测量盲区更小，对于小罐测量效果也很好；

6、波长更短，对小颗粒物料的料位测量更适合。
- 1.Utilizes the principle of time-of-flight, unaffected by steam, dust, foam, and other factors.

2. Incorporates advanced microprocessors and unique Echo Discovery echo processing technology.

3. Uses contact rod or cable antenna for signal transmission, minimizes interference, and enables measurements in complex conditions such as high temperature, high pressure, and low dielectric constant media.

4. Features a robust modular design, simple operation, reduced operating and maintenance costs, and improved safety.

5. Offers a smaller measurement blind zone and performs well in measuring small tanks.

6. Has a shorter wavelength, making it more suitable for level measurement of small particles or materials.

产品信息

Product Information

 <div>TKWL-1301</div>	<div>应用：液体及固体粉状测量，复杂过程条件</div> <div>测量范围：0-15m</div> <div>测量精度：±3mm</div> <div>过程温度：-40~120℃/-40~200℃/-40~600℃</div> <div>过程压力：-0.1~4.0MPa/-0.1~10MPa</div> <div>频率：100MHZ~1.8GHz</div> <div>输出信号：4-20mA/HART</div> <div>电源：两线制（DC24V）</div> <div>四线制（DC24V/AC220V）</div> <div>现场显示：标配</div> <div>过程连接：螺纹/法兰/支架</div> <div>天线：单缆式天线</div> <div>防爆标志：ExdbIICT6 Gb</div> <div>ExialICT6 Ga</div> <div>ExdbII BT4 Gb</div> <div>Extb II ICT80℃ Db</div>	<div>Application: Measurement of liquids and solid powders in complex process conditions.</div> <div>Measurement range: 0-15m</div> <div>Measurement accuracy: ±3mm</div> <div>Process temperature: -40~120℃/-40~200℃/-40~600℃</div> <div>Process pressure: -0.1~4.0MPa/-0.1~10MPa</div> <div>Frequency: 100MHz~1.8GHz</div> <div>Output signal: 4-20mA/HART</div> <div>Power supply: Two-wire system (DC24V), Four-wire system (DC24V/AC220V)</div> <div>Field display: Included as standard</div> <div>Process connection: Thread/Flange/Bracket</div> <div>Antenna: Single-cable antenna</div> <div>Explosion-proof marking: ExdbIICT6 Gb</div> <div>ExialICT6 Ga</div> <div>ExdbII BT4 Gb、</div> <div>Extb II ICT80℃ Db</div>
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 <p>TKWL-1302</p>	<p>应用：液体及固体粉状测量，复杂过程条件            测量范围：0-6m            测量精度：±3mm            过程温度：-40 ~ 120°C/-40 ~ 200°C/-40 ~ 600°C            过程压力：-0.1 ~ 4.0MPa/-0.1 ~ 10MPa            频率：100MHZ ~ 1.8GHz            输出信号：4-20mA/HART            电源：两线制（DC24V）            四线制（DC24V/AC220V）            现场显示：标配            过程连接：螺纹/法兰/支架            天线：单杆式天线            防爆标志：ExdbIICT6 Gb                          ExialICT6 Ga                          ExdbII BT4 Gb                          Extb II ICT80°C Db</p>	<p>Application: Measurement of liquids and solid powders in complex process conditions            Measurement range: 0-6m            Measurement accuracy: ±3mm            Process temperature: -40 to 120°C / -40 to 200°C / -40 to 600°C            Process pressure: -0.1 to 4.0MPa / -0.1 to 10MPa            Frequency: 100MHZ ~ 1.8GHz            Output signal: 4-20mA/HART            Power supply: Two-wire system (DC24V), Four-wire system (DC24V/AC220V)            On-site display: Standard            Process connection: Thread/Flange/Bracket            Antenna: Single rod antenna            Explosion-proof marking: ExdbIICT6 Gb, ExialICT6 Ga, ExdbII BT4 Gb, Extb II ICT80°C Db</p>
 <p>TKWL-1303</p>	<p>应用：小介电常数液体；水泥仓粉料测量；粉煤灰粉测量            测量范围：双杆6m/双缆30m            测量精度：±3mm            过程温度：-40 ~ 120°C/-40 ~ 200°C            过程压力：-0.1 ~ 4.0MPa            频率：100MHZ ~ 1.8GHz            输出信号：4-20mA/HART            电源：两线制（DC24V）            四线制（DC24V/AC220V）            现场显示：标配            过程连接：法兰            天线：双杆式天线/双缆式天线            防爆标志：ExdbIICT6 Gb                          ExialICT6 Ga                          ExdbII BT4 Gb                          Extb II ICT80°C Db</p>	<p>Application: Measurement of low dielectric constant liquids; cement silo powder measurement; fly ash powder measurement            Measurement range: Dual rod 6m / Dual cable 30m            Measurement accuracy: ±3mm            Process temperature: -40 to 120°C / -40 to 200°C            Process pressure: -0.1 to 4.0MPa            Frequency: 100MHZ to 1.8GHz            Output signal: 4-20mA/HART            Power supply: Two-wire system (DC24V), Four-wire system (DC24V/AC220V)            On-site display: Standard            Process connection: Flange            Antenna: Dual rod antenna / Dual cable antenna            Explosion-proof marking: ExdbIICT6 Gb, ExialICT6 Ga, ExdbII BT4 Gb, Extb II ICT80°C Db</p>
 <p>TKWL-1305</p>	<p>应用：无离子水、脱氧水等液体的测量            测量范围：0-6m            测量精度：±3mm            过程温度：-40 ~ 120°C/-40 ~ 200°C            过程压力：-0.1 ~ 4.0MPa            频率：100MHZ ~ 1.8GHz            输出信号：4-20mA/HART            电源：两线制（DC24V）            四线制（DC24V/AC220V）            现场显示：标配            过程连接：法兰            天线：同轴管式天线            防爆标志：ExdbIICT6 Gb                          ExialICT6 Ga                          ExdbII BT4 Gb                          Extb II ICT80°C Db</p>	<p>Application: Measurement of ion-free water, deionized water, and similar liquids            Measurement range: 0-6m            Measurement accuracy: ±3mm            Process temperature: -40 to 120°C / -40 to 200°C            Process pressure: -0.1 to 4.0MPa            Frequency: 100MHZ to 1.8GHz            Output signal: 4-20mA/HART            Power supply: Two-wire system (DC24V), Four-wire system (DC24V/AC220V)            On-site display: Standard            Process connection: Flange            Antenna: Coaxial pipe antenna            Explosion-proof marking: ExdbIICT6 Gb, ExialICT6 Ga, ExdbII BT4 Gb, Extb II ICT80°C Db</p>



选型指南

Selection Handbook

TKWL-1301						
<div>电气接口</div> <div>Electrical Entry</div> <div>M20*1.5</div> <div>1/2NPT</div> <div>特殊定制</div> <div>Customized</div>	<div>M</div> <div>N</div> <div>X</div>					
<div>外壳材质</div> <div>Enclosure Material</div> <div>铸铝</div> <div>Cast Aluminum</div> <div>不锈钢</div> <div>Stainless Steel</div>		<div>L</div> <div>Q</div>				
<div>电子组件</div> <div>Electronic Components</div> <div>4-20mA/HART/24V DC 两线制</div> <div>4-20mA/HART/24V DC Two-wire system</div> <div>4-20mA/HART/24V DC 四线制</div> <div>4-20mA/HART/24V DC Four-wire system</div> <div>4-20mA/HART /220V AC四线制</div> <div>4-20mA/HART/220V AC Four-wire system</div> <div>特殊定制</div> <div>Special Customization</div>			<div>A</div> <div>B</div> <div>C</div> <div>X</div>			
<div>密封温度</div> <div>Sealing Temperature</div> <div>普通密封-40-120℃</div> <div>Standard sealing, -40 to 120℃</div> <div>高温密封-40-200℃带散热器</div> <div>High-temperature sealing with radiator, -40 to 200℃</div> <div>高温高压密封-40-600℃带散热器</div> <div>High-temperature and high-pressure sealing with radiator, -40 to 600℃</div>				<div>P</div> <div>G</div> <div>H</div>		
<div>天线材质</div> <div>Antenna Material</div> <div>304</div> <div>316L</div> <div>304+PTFE</div> <div>316L+PTFE</div>					<div>A</div> <div>B</div> <div>C</div> <div>D</div>	



<b>安装方式</b> <b>Installation Method</b> G1-1/2 螺纹 G1-1/2 Threaded DN50 法兰 DN50 Flange DN65 法兰 DN65 Flange DN80 法兰 DN80 Flange DN100 法兰 DN100 Flange DN125 法兰 DN125 Flange DN150 法兰 DN150 Flange 其它 Other	A B C D E F G Z
<b>防爆形式</b> <b>Explosion Protection Type</b> 普通型 Ordinary Type 防爆型 Explosion-proof Type	P D



TKWL-1302							
<div>电气接口</div> <div>Electrical Entry</div> <div>M20*1.5</div> <div>1/2NPT</div> <div>特殊定制</div> <div>Customized</div>		<div>M</div> <div>N</div> <div>X</div>					
<div>外壳材质</div> <div>Enclosure Material</div> <div>铸铝</div> <div>Cast Aluminum</div> <div>不锈钢</div> <div>Stainless Steel</div>		<div>L</div> <div>Q</div>					
<div>电子组件</div> <div>Electronic Components</div> <div>4-20mA/HART/24V DC 两线制</div> <div>4-20mA/HART/24V DC Two-wire system</div> <div>4-20mA/HART/24V DC 四线制</div> <div>4-20mA/HART/24V DC Four-wire system</div> <div>4-20mA/HART /220V AC四线制</div> <div>4-20mA/HART/220V AC Four-wire system</div> <div>特殊定制</div> <div>Special Customization</div>		<div>A</div> <div>B</div> <div>C</div> <div>X</div>					
<div>密封温度</div> <div>Sealing Temperature</div> <div>普通密封-40-120℃</div> <div>Standard sealing, -40 to 120℃</div> <div>高温密封-40-200℃带散热器</div> <div>High-temperature sealing with radiator, -40 to 200℃</div> <div>高温高压密封-40-600℃带散热器</div> <div>High-temperature and high-pressure sealing with radiator, -40 to 600℃</div>		<div>P</div> <div>G</div> <div>H</div>					
<div>天线材质</div> <div>Antenna Material</div> <div>304</div> <div>316L</div> <div>304+PTFE</div> <div>316L+PTFE</div>		<div>A</div> <div>B</div> <div>C</div> <div>D</div>					



<p><b>安装方式</b> <b>Installation Method</b></p> <p>G1-1/2螺纹 G1-1/2 Threaded</p> <p>DN50法兰 DN50 Flange</p> <p>DN65法兰 DN65 Flange</p> <p>DN80法兰 DN80 Flange</p> <p>DN100法兰 DN100 Flange</p> <p>DN125法兰 DN125 Flange</p> <p>DN150法兰 DN150 Flange</p> <p>其它 Other</p>	<p>A</p> <p>B</p> <p>C</p> <p>D</p> <p>E</p> <p>F</p> <p>G</p> <p>Z</p>
<p><b>防爆形式</b> <b>Explosion Protection Type</b></p> <p>普通型 Ordinary Type</p> <p>防爆型 Explosion-proof Type</p>	<p>P</p> <p>D</p>



TKWL-1303							
<div>电气接口</div> <div>Electrical Entry</div> <div>M20*1.5</div> <div>1/2NPT</div> <div>特殊定制</div> <div>Customized</div>		M					
		N					
		X					
<div>外壳材质</div> <div>Enclosure Material</div> <div>铸铝</div> <div>Cast Aluminum</div> <div>不锈钢</div> <div>Stainless Steel</div>		L					
		Q					
<div>电子组件</div> <div>Electronic Components</div> <div>4-20mA/HART/24V DC 两线制</div> <div>4-20mA/HART/24V DC Two-wire system</div> <div>4-20mA/HART/24V DC 四线制</div> <div>4-20mA/HART/24V DC Four-wire system</div> <div>4-20mA/HART /220V AC四线制</div> <div>4-20mA/HART/220V AC Four-wire system</div> <div>特殊定制</div> <div>Special Customization</div>		A					
		B					
		C					
		X					
<div>密封温度</div> <div>Sealing Temperature</div> <div>普通密封-40-120℃</div> <div>Standard sealing, -40 to 120℃</div> <div>高温密封-40-200℃带散热器</div> <div>High-temperature sealing with radiator, -40 to 200℃</div>		P					
		G					
<div>天线类型</div> <div>Antenna Type</div> <div>双杆式</div> <div>Dual rod antenna</div> <div>双缆式</div> <div>Dual cable antenna</div>		1					
		2					
<div>安装方式</div> <div>Installation Method</div> <div>DN80法兰</div> <div>DN80 Flange</div> <div>DN100法兰</div> <div>DN100 Flange</div>		A					
		B					



DN125法兰 DN125 Flange DN150法兰 DN150 Flange 其它 Other	C  D  Z	
防爆形式 Explosion Protection Type 普通型 Ordinary Type 防爆型 Explosion-proof Type		P  D



TKWL-1305							
<div>电气接口</div> <div>Electrical Entry</div> <div>M20*1.5M</div> <div>1/2NPTN</div> <div>特殊定制X</div> <div>Customized</div>							
<div>外壳材质</div> <div>Enclosure Material</div> <div>铸铝L</div> <div>Cast Aluminum</div> <div>不锈钢Q</div> <div>Stainless Steel</div>							
<div>电子组件</div> <div>Electronic Components</div> <div>4-20mA/HART/24V DC 两线制A</div> <div>4-20mA/HART/24V DC Two-wire system</div> <div>4-20mA/HART/24V DC 四线制B</div> <div>4-20mA/HART/24V DC Four-wire system</div> <div>4-20mA/HART /220V AC四线制C</div> <div>4-20mA/HART/220V AC Four-wire system</div> <div>特殊定制X</div> <div>Special Customization</div>							
<div>密封温度</div> <div>Sealing Temperature</div> <div>普通密封-40-120℃P</div> <div>Standard sealing, -40 to 120℃</div> <div>高温密封-40-200℃带散热器G</div> <div>High-temperature sealing with radiator, -40 to 200℃</div>							
<div>天线材质</div> <div>Antenna Material</div> <div>304A</div> <div>316LB</div>							
<div>安装方式</div> <div>Installation Method</div> <div>DN80法兰A</div> <div>DN80 Flange</div> <div>DN100法兰B</div> <div>DN100 Flange</div> <div>DN125法兰C</div> <div>DN125 Flange</div> <div>DN150法兰D</div> <div>DN150 Flange</div> <div>其它Z</div> <div>Other</div>							



防爆形式	
Explosion Protection Type	
普通型	P
Ordinary Type	
防爆型	D
Explosion-proof Type	



# TKWL-1400系列80GHz调频雷达物位计

## TKWL-1400 Series 80GHz Radar Level Gauge

### 产品概述

#### Product Overview

TKWL-1400系列80GHz调频雷达物位计指工作在W波段（76-81GHz）的调频连续波（FMCW）雷达产品，支持四线制和两线制应用。输出4~20mA模拟信号，测量最大距离可达120米。由于它工作频率更高，波长更短，所以尤其适合固体应用，通过透镜发射接收电磁波的工作方式，在高粉尘，恶劣温度环境下具有独特的优势。仪表提供法兰或者螺纹的固定方式，使得安装便捷简易。

The TKWL-1400 series is an 80GHz radar level gauge that operates in the W-band frequency range (76-81GHz) using Frequency Modulated Continuous Wave (FMCW) radar technology. It supports both four-wire and two-wire applications and provides a 4-20mA analog output signal. It can measure distances up to 120 meters. With its higher operating frequency and shorter wavelength, it is particularly suitable for solid applications. The gauge utilizes a lens to emit and receive electromagnetic waves, providing unique advantages in high-dust and harsh temperature environments. The instrument offers flange or threaded mounting options, ensuring convenient and easy installation.

### 产品原理

#### Product Principle

80GHz调频雷达物位计是基于调频连续波技术的先进测量系统。雷达物位计通过天线传感器发射连续的微波信号，该发射信号的频率由锯齿波进行线性调制。连续发射的微波信号遇到被测介质表面时，由于介电常数发生突变，微波信号的部分能量被连续的反射回来，并被透镜天线系统所接收。

接收信号的频率与发射信号的频率总是存在差值的，而该差值与雷达天线到被测介质表面的距离成正比，越大的频率差值代表着越远的物料距离。由式（1）即可计算出被测介质到仪表法兰的距离。

$$D = 1/2 \cdot c \cdot (\Delta F / R) \quad (1)$$

其中D为测量参考面到被测介质的距离，c为光（电磁波）在真空中的传播速度， $\Delta F$ 为接收信号与发射信号的频率差，R为发射信号频率随时间的变化率。

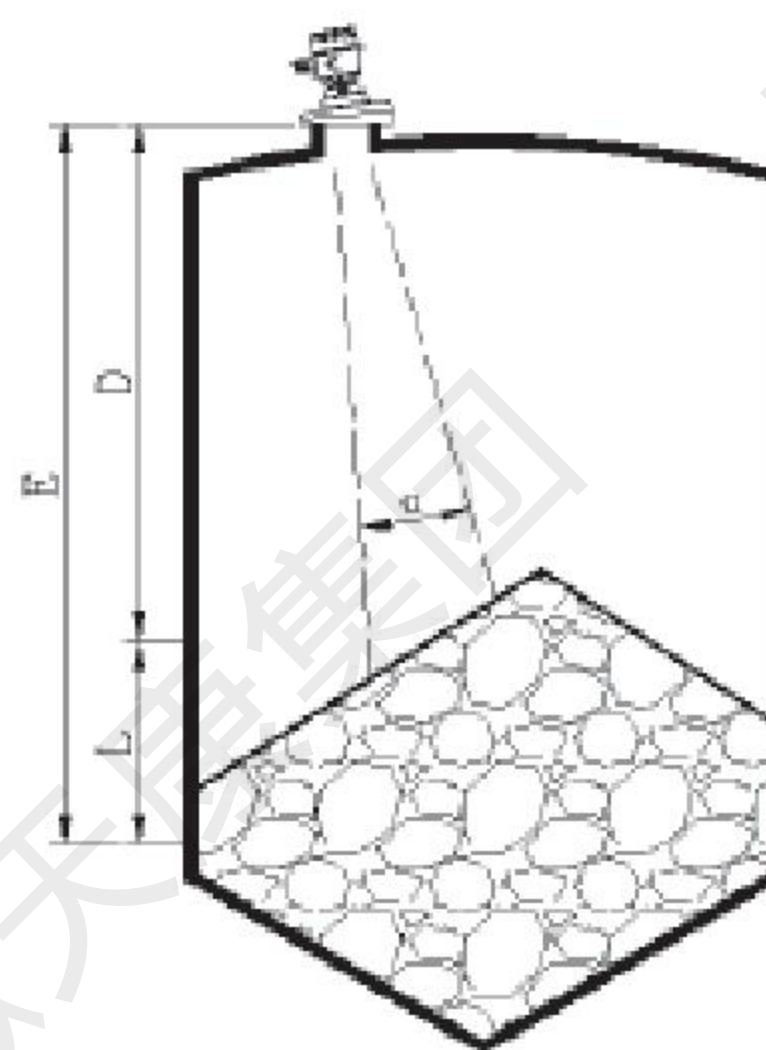
然后根据用户设定的空料位位置，由式（2）即可计算出物料高度。

$$L = E - D \quad (2)$$

其中E为测量参考面到用户设定的空料位位置，D为测量参考面到被测介质的距离，L为物料高度。

The 80GHz radar level gauge operates on the principle of Frequency Modulated Continuous Wave (FMCW) technology, which is an advanced measurement system. The gauge emits continuous microwave signals through the antenna sensor, with the frequency of the transmitted signal being linearly modulated by a sawtooth waveform. When the emitted microwave signal encounters the surface of the measured medium, a portion of its energy is reflected back continuously due to the abrupt change in the dielectric constant. These reflected signals are then received by the lens antenna system.

The frequency of the received signal always exhibits a difference compared to the frequency of the transmitted signal. This frequency difference, known as the frequency shift, is directly proportional to the distance between the radar antenna and the surface of the measured medium. A larger frequency shift corresponds to a greater distance of the material being measured. The distance from the reference point of measurement to the





instrument flange can be calculated using Equation (1):  $D = (c * \Delta F) / (2 * R)$  (1)

Where: D is the distance from the reference point to the surface of the measured medium. c is the speed of light (electromagnetic waves) in a vacuum.  $\Delta F$  is the frequency difference between the received and transmitted signals. R is the rate of change of the transmitted signal frequency over time.

Subsequently, based on the user-defined empty level position, the material height can be determined using Equation (2):  $L = D - E$  (2)

Where: E is the distance from the reference point to the user-defined empty level position. D is the distance from the reference point to the surface of the measured medium. L represents the material height.


## 产品特点

### Product Features

- 1、显示界面简单易懂，快速设置菜单便于用户操作；
  - 2、非接触测量，无磨损，无污染；
  - 3、波长更短，在固体表面具有更好的反射特性；
  - 4、仪表信噪比高，盲区小，可实现小型容器精确测量；
  - 5、最窄3°天线波束角，安装环境中的干扰对仪表的影响更小，安装更为便捷；
  - 6、几乎不受腐蚀、泡沫影响；
  - 7、几乎不受大气中水蒸气、温度和压力变化影响；
  - 8、5GHz工作带宽，使产品拥有更高的测量分辨率与测量精度；
  - 9、80GHz频率，是测量固体和低介电常数介质的最佳选择。
1. User-friendly display interface with quick setup menu for easy operation.
  2. Non-contact measurement, no wear and no contamination.
  3. Shorter wavelength providing better reflection characteristics on solid surfaces.
  4. High signal-to-noise ratio and small blind zone, enabling precise measurement in small containers.
  5. Narrow 3° antenna beam angle, minimizing the impact of environmental interference and facilitating convenient installation.
  6. Minimal impact from corrosion and foam.
  7. Insensitive to changes in water vapor, temperature, and pressure in the atmosphere.
  8. 5GHz operating bandwidth for higher measurement resolution and accuracy.
  9. 80GHz frequency, making it the optimal choice for measuring solids and low dielectric constant media.

## 产品信息

### Product Information

 <p>TKWL-1401</p>	<p>应用：液体 轻微腐蚀性液体            测量范围：120m            测量精度：±1mm            过程温度：-40~100℃/-40~1000℃            过程压力：常压/-0.1~1.0MPa            频率：80G            输出信号：4-20mA/HART/Modbus            电源：两线制 (DC24V)            四线制 (DC24V/AC220V)            现场显示：标配</p>	<p>Application: Measurement of liquids, mildly corrosive liquids            Measurement range: 120m            Measurement accuracy: ±1mm            Process temperature: -40 to 100℃/-40 to 1000℃            Process pressure: Atmospheric pressure/-0.1 to 1.0MPa            Frequency: 80GHz            Output signal: 4-20mA/HART/Modbus            Power supply: Two-wire system (DC24V), Four-wire system (DC24V/AC220V)            On-site display: Standard</p>
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	过程连接: 螺纹/法兰/支架 天线: 透镜 防爆标志: ExdbIICT6 Gb ExialICT6 Ga ExdbIIBT4 Gb Extb IIICT80°C Db	Process connection: Thread/Flange/Bracket Antenna: Lens Explosion-proof marking: ExdbIICT6 Gb ExialICT6 Ga ExdbIIBT4 Gb Extb IIICT80°C Db
 <b>TKWL-1402</b>	应用: 液体 过程条件复杂的强腐蚀性液体 测量范围: 120m 测量精度: $\pm 1\text{mm}$ 过程温度: $-40\sim 120^{\circ}\text{C}/-40\sim 200^{\circ}\text{C}$ 过程压力: 常压/ $-0.1\sim 4.0\text{MPa}$ 频率: 80G 输出信号: 4-20mA/HART/Modbus 电源: 两线制 (DC24V) 四线制 (DC24V/AC220V) 现场显示: 标配 过程连接: 法兰 天线: 透镜 防爆标志: ExdbIICT6 Gb ExialICT6 Ga ExdbIIBT4 Gb Extb IIICT80°C Db	Application: Measurement of liquids, highly corrosive liquids with complex process conditions Measurement range: 120m Measurement accuracy: $\pm 1\text{mm}$ Process temperature: $-40$ to $120^{\circ}\text{C}$ / $-40$ to $200^{\circ}\text{C}$ Process pressure: Atmospheric pressure / $-0.1$ to $4.0\text{MPa}$ Frequency: 80GHz Output signal: 4-20mA/HART/Modbus Power supply: Two-wire system (DC24V), Four-wire system (DC24V/AC220V) On-site display: Standard Process connection: Flange Antenna: Lens Explosion-proof marking: ExdbIICT6 Gb ExialICT6 Ga ExdbIIBT4 Gb Extb IIICT80°C Db
 <b>TKWL-1403</b>	应用: 固体 存储容器、过程容器或强粉尘易结晶、结露场合 测量范围: 120m 测量精度: $\pm 1\text{mm}$ 过程温度: $-40\sim 200^{\circ}\text{C}$ 过程压力: 常压/ $-0.1\sim 4.0\text{MPa}$ 频率: 80G 输出信号: 4-20mA/HART/Modbus 电源: 两线制 (DC24V) 四线制 (DC24V/AC220V) 现场显示: 标配 过程连接: 法兰 天线: 透镜 防爆标志: ExdbIICT6 Gb ExialICT6 Ga ExdbIIBT4 Gb Extb IIICT80°C Db	Application: Measurement of solids in storage vessels, process containers, or environments with heavy dust, crystallization, or condensation Measurement range: 120m Measurement accuracy: $\pm 1\text{mm}$ Process temperature: $-40$ to $200^{\circ}\text{C}$ Process pressure: Atmospheric pressure / $-0.1$ to $4.0\text{MPa}$ Frequency: 80GHz Output signal: 4-20mA/HART/Modbus Power supply: Two-wire system (DC24V), Four-wire system (DC24V/AC220V) On-site display: Standard Process connection: Flange Antenna: Lens Explosion-proof marking: ExdbIICT6 Gb ExialICT6 Ga ExdbIIBT4 Gb Extb IIICT80°C Db



## 选型指南

### Selection Handbook

TKWL-1401						
<b>电气接口</b> <b>Electrical Entry</b> M20*1.5                      M 1/2NPT                        N 特殊定制                      X Special Customization						
<b>外壳材质</b> <b>Enclosure Material</b> 铸铝                              L Cast Aluminum 不锈钢                            Q Stainless Steel						
<b>电子组件</b> <b>Electronic Components</b> 4-20mA/HART/24V DC 两线制                      A 4-20mA/HART/24V DC Two-wire system 4-20mA/HART/24V DC 四线制                      B 4-20mA/HART/24V DC Four-wire system 4-20mA/HART /220V AC四线制                      C 4-20mA/HART/220V AC Four-wire system 特殊定制    X Special Customization						
<b>密封温度</b> <b>Sealing Temperature</b> 普通密封-40-100℃                                      P Standard sealing, -40 to 100℃ 高温密封-40-1000℃带散热器                        G High-temperature sealing with radiator, -40 to 1000℃						
<b>过程连接</b> <b>Process Connection</b> G1-1/2螺纹    A G1-1/2 Threaded G3-1/2螺纹    B G3-1/2 Threaded						



DN50法兰 DN50 Flange DN80 法兰 DN80 Flange DN100 法兰 DN100 Flange DN125 法兰 DN125 Flange DN150 法兰 DN150 Flange 特殊定制 Special Customization	C D E F G Z	
<b>防爆形式</b> <b>Explosion Protection Type</b> 普通型 Ordinary Type 防爆型 Explosion-proof Type		P D



TKWL-1402						
<b>电气接口</b> <b>Electrical Entry</b> M20*1.5                      M 1/2NPT                        N 特殊定制                      X Special Customization						
<b>外壳材质</b> <b>Enclosure Material</b> 铸铝                              L Cast Aluminum 不锈钢                            Q Stainless Steel						
<b>电子组件</b> <b>Electronic Components</b> 4-20mA/HART/24V DC 两线制                      A 4-20mA/HART/24V DC Two-wire system 4-20mA/HART/24V DC 四线制                      B 4-20mA/HART/24V DC Four-wire system 4-20mA/HART /220V AC四线制                      C 4-20mA/HART/220V AC Four-wire system 特殊定制    X Special Customization						
<b>密封温度 Sealing Temperature</b> 普通密封-40-120℃                                      P Standard sealing, -40 to 120℃ 高温密封-40-200℃带散热器                                      G High-temperature sealing with radiator, -40 to 200℃						
<b>天线材料/过程连接</b> <b>Antenna Material/Process Connection</b> 不锈钢复合PTFE法兰 DN50                                      A Stainless Steel with PTFE Composite Flange DN50 不锈钢复合PTFE法兰 DN65                                      B Stainless Steel with PTFE Composite Flange DN65 不锈钢复合PTFE法兰 DN80                                      C Stainless Steel with PTFE Composite Flange DN80 不锈钢复合PTFE法兰 DN100                                      D Stainless Steel with PTFE Composite Flange DN100 不锈钢复合PTFE法兰 DN125                                      E Stainless Steel with PTFE Composite Flange DN125 不锈钢复合PTFE法兰 DN150                                      F Stainless Steel with PTFE Composite Flange DN150 特殊定制    X Special Customization						



<b>防爆形式</b> <b>Explosion Protection Type</b>	
普通型 Ordinary Type	P
防爆型 Explosion-proof Type	D



TKWL-1403					
<b>电气接口</b> <b>Electrical Entry</b> M20*1.5                      M 1/2NPT                        N 特殊定制                      X Special Customization					
<b>外壳材质</b> <b>Enclosure Material</b> 铸铝 Cast Aluminum                      L 不锈钢 Stainless Steel                      Q					
<b>电子组件</b> <b>Electronic Components</b> 4-20mA/HART/24V DC 两线制                      A 4-20mA/HART/24V DC Two-wire system 4-20mA/HART/24V DC 四线制                      B 4-20mA/HART/24V DC Four-wire system 4-20mA/HART /220V AC四线制                      C 4-20mA/HART/220V AC Four-wire system 特殊定制                      X Special Customization					
<b>过程连接</b> <b>Process Connection</b> DN80 法兰    A DN80 Flange DN100 法兰    B DN100 Flange DN125 法兰    C DN125 Flange DN150 法兰    D DN150 Flange 特殊定制    Z Special Customization					
<b>防爆形式</b> <b>Explosion Protection Type</b> 普通型    P Ordinary Type 防爆型    D Explosion-proof Type					



# TKWL-130系列磁致伸缩液位计

## TKWL-130 Series Magnetostrictive Level Gauge

### 产品概述

#### Product Overview

TKWL-130系列磁致伸缩液位计用于石油、化工原料储存、工业流程、生化、医药、食品饮料、罐区管理和加油站地下库存等各种液罐的液位工业计量和控制，大坝水位，水库水位监测与污水处理等场所。

The TKWL-130 series magnetostrictive level gauge is used for liquid level industrial measurement and control in various liquid tanks, including petroleum and chemical raw material storage, industrial processes, biochemicals, pharmaceuticals, food and beverages, tank farm management, and underground storage at gas stations. It is also suitable for monitoring dam water levels, reservoir water levels, and wastewater treatment facilities.

### 产品原理

#### Product Principle

液位计工作时，液位计的电路部分将在波导丝上激励出脉冲电流，该电流沿波导丝传播时会在波导丝的周围产生脉冲电流磁场。在液位计测杆外配有一浮子，此浮子可以沿测杆随液位的变化而上下移动。在浮子内部有一组永久磁环。当脉冲电流磁场与浮子产生的磁环磁场相遇时，浮子周围的磁场发生改变从而使得由磁致伸缩材料做成的波导丝在浮子所在的位置产生一个扭转波脉冲，这个脉冲以固定的速度沿波导丝传回并由检出机构检出。通过测量脉冲电流与扭转波的时间差可以精确地确定浮子所在的位置。

When the liquid level gauge is in operation, the circuit section of the gauge generates a pulsed current on the waveguide wire. This current creates a pulsed magnetic field around the waveguide wire as it propagates along it. A float is attached to the outside of the gauge probe, which can move up and down along the probe with the change in liquid level. Inside the float, there is a set of permanent magnets. When the pulsed magnetic field encounters the magnetic field generated by the magnets in the float, the magnetic field around the float changes, causing a torsional pulse to occur in the waveguide wire made of magnetostrictive material at the position of the float. This pulse travels back along the waveguide wire at a fixed speed and is detected by the detection mechanism. By measuring the time difference between the pulsed current and the torsional wave, the position of the float can be accurately determined.

### 产品特点

#### Product Features

- |                   |  |
|-------------------|--|
| 1、高精度、高稳定性、高可靠性；  | 1.High accuracy, stability, and reliability.                                       |
| 2、使用寿命长；          | 2. Long service life.  |
| 3、多种信号输出方式选择；     | 3. Multiple signal output options.   |
| 4、具有反向极性保护功能；     | 4. Reverse polarity protection function.   |
| 5、防雷击、防射频干扰；      | 5. Protection against lightning strikes and RF interference.                       |
| 6、结构精巧、环境适应性强；    | 6. Compact structure with strong environmental adaptability.                       |
| 7、不需要定期重标和维护；     | 7. No need for regular recalibration and maintenance.                              |
| 8、可监测带压或不带压液罐的液位； | 8. Capable of monitoring the liquid level in pressurized or non-pressurized tanks. |
| 9、防爆、防腐（可选）。      | 9. Explosion-proof and corrosion-resistant (Optional add-on).                      |



## 产品信息

### Product Information

 <p>TKWL-130</p>	<p>测量范围: 0-6000mm, 特殊可定制            测量精度: <math>\pm 1\text{mm}</math>            介质密度: <math>\geq 0.3\text{g/cm}^3</math>            工作温度: <math>-40\sim 160^{\circ}\text{C}</math>            工作压力: <math>-0.1\sim 4\text{MPa}</math>            介质黏度: <math>\leq 0.4\text{Pa}\cdot\text{s}</math>            材质: 304、316L、Ti、304+PTFE、316L+PTFE等            连接方式: 螺纹/法兰            防爆等级: ExdbIICT6 Gb</p>	<p>Measurement Range: 0-6000mm            (Special customization available)            Measurement Accuracy: <math>\pm 1\text{mm}</math>            Media Density: <math>\geq 0.3\text{g/cm}^3</math>            Operating Temperature: <math>-40</math> to <math>160^{\circ}\text{C}</math>            Operating Pressure: <math>-0.1\sim 4\text{MPa}</math>            Media Viscosity: <math>\leq 0.4\text{Pa}\cdot\text{s}</math>            Materials: 304, 316L, Ti, 304+PTFE, 316L+PTFE, etc.            Connection Methods: Threaded, Flange            Explosion Protection Rating: ExdbIICT6 Gb</p>
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## 选型指南

### Selection Handbook

TKWL-130					
<b>显示类型</b> <b>Display Type</b> 带显示 With 不带显示 Without	B   X				
<b>接液材质</b> <b>Wetted Material</b> 304 316L Ti 304+PTFE 316L+PTFE 其他材质 Other material	1 2 3 4 5 0				
<b>电气接口</b> <b>Electrical Interface</b> M20*1.5 1/2NPT 特殊定制 Customized	M N X				



<div>输出信号</div> <div>Output Signal</div> <div>4-20mA</div> <div>4-20mA+ HART</div>	<div>1</div> <div>2</div>
<div>防爆形式</div> <div>Explosion Protection Type</div> <div>普通型</div> <div>Ordinary Type</div> <div>防爆型</div> <div>Explosion-proof Type</div>	<div>P</div> <div>D</div>



# TKWL-140系列玻璃板液位计

## TKWL-140 Series Glass Plate Level Gauge

### 产品概述

#### Product Overview

TKWL-140系列玻璃板液位计主要用于各种受压容器或敞口容器（如塔、罐、槽等）内的液体液位现场直接指示。

The TKWL-140 series glass plate level gauge is primarily used for on-site direct indication of liquid levels in various pressurized or open containers, such as towers, tanks, and troughs.

### 产品原理

#### Product Principle

玻璃板液位计基于连通器原理设计的，由玻璃板及液位计主体通过法兰与被测容器相接构成连通器，透过玻璃板可观察到实际液位。液位计主要由玻璃板、表体、压盖、上下阀门和法兰等组成的，由于玻璃板长度固定，所以通过改变玻璃板节数可制成不同规格的液位计。液位计配套的上下阀门不但起截止阀的作用，而且内置钢球在玻璃板意外破损时起自动关闭作用，防止液体或气体外泄。

The glass plate liquid level gauge is designed based on the principle of a connector. It consists of a glass plate and the main body of the level gauge, which are connected to the measured container through a flange, forming a continuous connection. The actual liquid level can be observed through the glass plate. The level gauge primarily comprises a glass plate, a housing, a pressure cover, upper and lower valves, and a flange. By adjusting the number of sections in the glass plate, level gauges of different specifications can be produced. The accompanying upper and lower valves not only act as shut-off valves but also feature an automatic closing function in case of glass plate damage, preventing any liquid or gas leakage.

### 产品信息

#### Product Information

 TKWL-140	测量范围：0-2000mm，特殊可定制 工作温度：-80~450℃ 工作压力：-0.1~10MPa 材质：碳钢、304、316L等 连接方式：螺纹/法兰	Measurement Range: 0-2000mm, customize for special requirements Operating Temperature: -80 to 450℃ Operating Pressure: -0.1~10MPa Material: Carbon steel, 304, 316L, etc. Connection Type: Threaded; Flange
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选型指南

Selection Handbook

TKWL-140		
<div>功能类型</div> <div>Functional Type</div> <div>透光式A</div> <div>Transparent Type</div> <div>双色透光式B</div> <div>Dual-color Transparent Type</div> <div>反射式C</div> <div>Reflective Type</div>		
<div>接液材质</div> <div>Liquid Contact Material</div> <div>碳钢1</div> <div>Carbon Steel</div> <div>3042</div> <div>304 Stainless Steel</div> <div>316L3</div> <div>316L Stainless Steel</div> <div>其他材质0</div> <div>Other Material</div>		
<div>特殊结构</div> <div>Special Structure</div> <div>无盲区1</div> <div>No Blind Zone</div> <div>蒸汽伴热2</div> <div>Steam Traced</div> <div>防霜式3</div> <div>Frost-proof</div> <div>带灯光4</div> <div>With Lighting</div> <div>其他特殊结构0</div> <div>Other Special Structure</div>		



# TKWL-150系列玻璃管液位计

## TKWL-150 Series Glass Tube Level Gauge

### 产品概述

#### Product Overview

TKWL-150系列玻璃管液位计是我公司采用高纯度玻璃管制造的产品。仪表显示清晰，密封性能好，耐高温、高压、防粘稠，寿命长，维护方便，广泛应用于石油、化工、电力、冶金等行业中各种容器及锅炉的液位检测指示。特别适用于无色透明液体的测量指示。

The TKWL-150 series glass tube level gauge is a product manufactured by our company using high-purity quartz tubes. This instrument provides clear display, excellent sealing performance, high temperature and high-pressure resistance, resistance to viscous fluids, long lifespan, easy maintenance, and finds wide application in various industries such as petroleum, chemical, power, and metallurgy for liquid level detection and indication in containers and boilers. It is particularly suitable for measuring and indicating colorless transparent liquids.

### 产品原理


#### Product Principle

玻璃管液位计上下均装有法兰，通过过程连接与容器构成连通器。透过石英管或玻璃管就可以直接读得容器内介质液位或界位的高度。双色式工作是基于光线在气相与液相介质中的光学透射、反射与折射原理，经过光学系统设计而实现，使气相与液相相比格外分明、清晰，液相呈绿色，气相呈红色，色别反差大，显示一目了然，无盲区。

The glass tube level gauge is equipped with flanges at both the top and bottom, which are connected to the container through a process connection, forming a continuous connection. The height of the liquid level or interface in the container can be directly read through the quartz or glass tube. The dual-color operation is based on the principles of optical transmission, reflection, and refraction of light in the gas and liquid phases. It is achieved through the design of an optical system, which ensures clear and distinct differentiation between the gas and liquid phases. The liquid phase appears green, while the gas phase appears red, creating a significant contrast in colors and providing a clear and unobstructed view without blind spots.

### 产品信息

#### Product Information

 TKWL-150	测量范围：0-2000mm，特殊可定制 工作温度：-80~450℃ 工作压力：2.5、4.0、6.4、11MPa 材质：碳钢、304、316L等 连接方式：螺纹/法兰	Measurement Range: 0-2000mm (customize for special requirements) Operating Temperature: -80 to 450℃ Operating Pressure: 2.5, 4.0, 6.4, 11MPa Material: Carbon Steel, 304 Stainless Steel, 316L Stainless Steel, etc. Connection Type: Threaded, Flange
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选型指南

Selection Handbook

TKWL-150		
<div>功能类型</div> <div>Functional Type</div> <div>普通玻璃管</div> <div>Ordinary Glass Tube</div> <div>石英玻璃管</div> <div>Quartz Glass Tube</div>	<div>A</div> <div>B</div>	
<div>接液材质</div> <div>Liquid Contact Material</div> <div>碳钢</div> <div>Carbon Steel</div> <div>304</div> <div>304 Stainless Steel</div> <div>316L</div> <div>316L Stainless Steel</div> <div>其他材质</div> <div>Other Material</div>	<div>1</div> <div>2</div> <div>3</div> <div>0</div>	
<div>特殊结构</div> <div>Special Structure</div> <div>无盲区</div> <div>No Blind Zone</div> <div>蒸汽伴热</div> <div>Steam Traced</div> <div>防霜式</div> <div>Frost-proof</div> <div>带灯光</div> <div>With Lighting</div> <div>其他特殊结构</div> <div>Other Special Structure</div>	<div>1</div> <div>2</div> <div>3</div> <div>4</div> <div>0</div>	



# TKWL-1600系列超声波液位计

## TKWL-1600 Series Ultrasonic Level gauge

### 产品概述

#### Product Overview

超声波液位计是由微处理器控制的数字液位仪表，在测量中超声波脉冲由传感器（换能器）发出，声波经液体表面反射后被同一传感器接收或超声波接收器，并由声波的发射和接收之间的时间来计算传感器到被测液体表面的距离。由于采用非接触的测量，被测介质几乎不受限制，可广泛用于各种液体高度的测量。

An ultrasonic level gauge is a digital level instrument controlled by a microprocessor. During measurement, ultrasonic pulses are emitted by a sensor (transducer). The sound waves are reflected by the liquid surface and then received by the same sensor or an ultrasonic receiver. The distance from the sensor to the surface of the measured liquid is calculated based on the time between the emission and reception of the sound waves. Due to the non-contact measurement, the type of medium being measured is almost unrestricted, making it widely used for measuring the level of various liquids.

### 产品原理

#### Product Principle

超声波液位计的工作原理是由换能器发出超声波脉冲遇到被测介质表面被反射回来，部分反射回波被同一换能器接收，转换成电信号。超声波脉冲以声波速度传播，从发射到接收超声波脉冲所需的时间间隔与换能器到被测介质表面的距离成正比。

The ultrasonic level gauge operates based on the following principles: The transducer emits ultrasonic pulses that encounter the surface of the measured medium and are reflected back. Some of the reflected echo waves are received by the same transducer and converted into electrical signals. The ultrasonic pulses propagate at the speed of sound, and the time interval required for the emitted and received ultrasonic pulses is directly proportional to the distance from the transducer to the surface of the measured medium.

### 产品特点

#### Product Features

- 1、自动功率调整、增益控制、温度补偿；
- 2、物理密封型探头，IP68防护等级，不会进水，提升使用寿命；
- 3、特殊回波处理技术，现场出现故障可供排查故障原因，维护方便；
- 4、具有干扰回波的抑止功能保证测量数据的真实，抗干扰能力强；
- 5、价格低，体积小，重量轻，可用于食品，化工，半导体等行业对液体非接触式物位测量，可用于远程液位监控和泵的控制。

1. Automatic power adjustment, gain control, and temperature compensation.
2. Physically sealed probe with an IP68 protection rating, ensuring water resistance and extending the lifespan of the device.
3. Special echo processing technology allows for on-site troubleshooting in case of malfunctions, making maintenance convenient.
4. Strong interference echo suppression function ensures the accuracy of measurement data and provides



excellent anti-interference capability.

5. Affordable price, small size, and lightweight design make it suitable for non-contact liquid level measurement in industries such as food, chemical, and semiconductor. It can also be used for remote level monitoring and pump control.

产品信息

Product Information

 <p>TKWL-1600/SK</p>	<p>应用：各类工业领域的液位测量，特别是水处理工业。</p> <p>测量范围：0-10m/0-15m等</p> <p>测量精度：±0.5%</p> <p>过程温度：-40 ~ 70℃</p> <p>过程压力：-0.02 ~ 0.3MPa</p> <p>输出信号：4-20mA/HART/Modbus</p> <p>电源：两线制（DC24V） 四线制（DC24V/AC220V）</p> <p>现场显示：标配</p> <p>外壳：铸铝（ABS可定制）</p> <p>过程连接：螺纹/法兰/支架</p> <p>探头材质：ABS、PTFE、PVDF等</p> <p>防爆标志：ExdbIICT6 Gb                   Extb IIICT80℃ Db</p>	<p>Application: Liquid level measurement in various industrial sectors, especially in the water treatment industry.</p> <p>Measurement Range: 0-10m/0-15m, etc.</p> <p>Measurement Accuracy: ±0.5%</p> <p>Process Temperature: -40 to 70℃</p> <p>Process Pressure: -0.02 to 0.3 MPa</p> <p>Output Signal: 4-20mA/HART/Modbus</p> <p>Power Supply: Two-wire system (DC24V) Four-wire system (DC24V/AC220V)</p> <p>Field Display: Standard</p> <p>Enclosure: Cast aluminum (ABS customization available)</p> <p>Process Connection: Thread/Flange/Bracket</p> <p>Probe Material: ABS, PTFE, PVDF, etc.</p> <p>Explosion-proof marking: ExdbIICT6 Gb   Extb IIICT80℃ Db</p>
 <p>TKWL-1600/FX</p>	<p>应用：各类工业领域的液位测量，特别是水处理工业。</p> <p>测量范围：0-10m/0-15m/0-20m等</p> <p>测量精度：±0.5%</p> <p>过程温度：-40 ~ 70℃</p> <p>过程压力：-0.02 ~ 0.3MPa</p> <p>输出信号：4-20mA/Modbus</p> <p>电源：四线制（DC24V/AC220V）</p> <p>现场显示：标配</p> <p>外壳：ABS</p> <p>过程连接：螺纹/法兰/支架</p> <p>探头材质：ABS、PTFE、PVDF等</p>	<p>Application: Liquid level measurement in various industrial fields, especially in the water treatment industry.</p> <p>Measurement range: 0-10m/0-15m/0-20m, etc.</p> <p>Measurement accuracy: ±0.5%</p> <p>Process temperature:-40 ~ 70℃</p> <p>Process pressure: -0.02 ~ 0.3MPa</p> <p>Output signal: 4-20mA/Modbus</p> <p>Power supply: Four-wire system (DC24V/AC220V)</p> <p>On-site display: Standard configuration</p> <p>Shell: ABS</p> <p>Process connection: Threaded/Flanged/Bracket</p> <p>Probe material: ABS, PTFE, PVDF, etc.</p>



选型指南

Selection Handbook

TKWL-1600							
<b>结构型式</b> <b>Structural Type</b> 一体式 SK Integrated Type 分体式 FX Split Type							
<b>探头材质</b> <b>Probe Material</b> ABS A PTFE F 特殊材质 T Special Material							
<b>安装方式</b> <b>Installation Method</b> G1-1/2螺纹 0 G1-1/2 Thread G2螺纹 1 G2 Thread DN50法兰 2 DN50 Flange DN65法兰 3 DN65 Flange DN80法兰 4 DN80 Flange DN100法兰 5 DN100 Flange DN125法兰 6 DN125 Flange DN150法兰 7 DN150 Flange 特殊定制 T Special Customization							
<b>继电器数量</b> <b>Relay Quantity</b> 没有继电器 R0 No Relay 1个继电器 R1 1 Relay 2个继电器 R2 2 Relays							



<div>输出信号</div> <div>Output Signal</div> <div>4-20mA</div> <div>4-20mA+ HART</div> <div>485通讯</div> <div>485Communication</div> <div>特殊输出信号</div> <div>Special Output Signal</div>	<div>TA</div> <div>TB</div> <div>TC</div>
<div>变送器外壳材质</div> <div>Gauge Enclosure Material</div> <div>ABS</div> <div>铸铝</div> <div>Cast Aluminum</div>	<div>PL</div> <div>AL</div>
<div>供电电源</div> <div>Power Supply</div> <div>24V DC两线制</div> <div>24V DC Two-wire</div> <div>24V DC四线制</div> <div>24V DC Four-wire</div> <div>220V AC四线制</div> <div>220V AC Four-wire</div>	<div>A</div> <div>B</div> <div>C</div>
<div>防爆形式</div> <div>Explosion Protection Type</div> <div>普通型</div> <div>Ordinary Type</div> <div>防爆型</div> <div>Explosion-proof Type</div>	<div>P</div> <div>D</div>



# TKWL-1700系列电容式液位计

## TKWL-1700 Series Capacitive Level Gauge

### 产品概述

#### Product Overview

TKWL-1700系列电容式液位计是一种可以用于测量液体、油类、固体的液位（物位）变送器。无可动部件，可靠性大大提高，它不受水蒸汽，灰尘或冷凝的影响，具有长期运行稳定可靠，灵敏度高，线性度好，耐高温、耐高压等优点。广泛用于石油、化工、冶金、电力、造纸、制药等各个领域。

The TKWL-1700 series capacitive level gauge is a type of level gauge used for measuring the level (or position) of liquids, oils, and solids. It has no moving parts, which greatly enhances its reliability. It is unaffected by factors such as water vapor, dust, or condensation, and offers long-term stable and reliable operation, high sensitivity, good linearity, and advantages of high temperature and high pressure resistance. It is widely used in various fields such as petroleum, chemical, metallurgy, power generation, paper making, pharmaceuticals, and more.

### 产品原理

#### Product Principle

电容式液位计安装在容器中时就构成了一个电容器，电极的金属棒(测量电极)作为电容器的一个极板，容器壁(注：若容器壁为绝缘材料，则应伸入另一个电极，称之为参考电极)作为电容器的另一个极板，当物位上升时，平常包围在两个极板间的空气或其它气体由具有与其不同介电常数的被测物料取代，这样因为极板间介电性的变化而引起电容量发生改变，电容式液位计通过射频电路检测到这种电容变化量并转换成线性电流输出。

When a capacitive level gauge is installed in a container, it forms a capacitor. The metal rod of the electrode (measuring electrode) acts as one plate of the capacitor, while the container wall (note: if the container wall is made of insulating material, another electrode should be inserted, known as a reference electrode) acts as the other plate of the capacitor. As the level of the substance rises, the air or other gas normally present between the two plates is replaced by the measured material, which has a different dielectric constant. This change in dielectric properties between the plates causes a change in the capacitance. The capacitive level gauge detects this capacitance change through radio frequency circuit and converts it into a linear current output.

### 产品特点

#### Product Features

- 1、结构简单，无任何可动或弹性元部件，因此可靠性极高，维护量极少。一般情况下，不必进行常规的大、中、小维修；
- 2、适用于容器的物位测量，且测量值不受被测液体的温度及容器的形状、压力影响；
- 3、特别适用于酸、碱等强腐蚀性液体的测量；
- 4、完善的过流、过压、电源极性保护；
- 5、可以测量任何导电介质。

1. Simple structure without any movable or elastic components, resulting in extremely high reliability and minimal maintenance requirements. In general, routine major, medium, and minor repairs are not necessary.

2. Suitable for level measurement vessels, with measurement values unaffected by the temperature of the measured liquid, the shape of the container, or the pressure.



- 3.Particularly suitable for measuring strong corrosive liquids such as acids and alkalis.
- 4.Comprehensive protection against overcurrent, overvoltage, and power polarity.
- 5.Capable of measuring any conductive medium.

产品信息

Product Information

 <p>TKWL-1700</p>	<p>测量范围: 0 ~ 30m</p> <p>电容范围: 0.1PF ~ 2000PF</p> <p>精度: 0.5级</p> <p>工作压力: -0.1 ~ 2MPa</p> <p>工作温度: -50 ~ 200℃</p> <p>环境温度: -40 ~ 85℃</p> <p>输出信号: 4 ~ 20mA/HART</p> <p>供电电压: 24VDC</p> <p>过程连接: 螺纹/法兰/支架</p>	<p>Measurement Range: 0 ~ 30m</p> <p>Capacitance Range: 0.1pF ~ 2000pF</p> <p>Accuracy: Class 0.5</p> <p>Operating Pressure: -0.1 ~ 2MPa</p> <p>Operating Temperature: -50℃ ~ 200℃</p> <p>Ambient Temperature: -40℃ ~ 85℃</p> <p>Output Signal: 4-20mA/HART</p> <p>Power Supply Voltage: 24V DC</p> <p>Process Connection: Thread/Flange/Bracket</p>
 <p>TKWL-1701</p>	<p>测量范围: 0 ~ 6m</p> <p>电容范围: 0.1PF ~ 2000PF</p> <p>精度: 0.5级</p> <p>工作压力: -0.1 ~ 2MPa</p> <p>工作温度: -50 ~ 200℃</p> <p>环境温度: -40 ~ 85℃</p> <p>输出信号: 4 ~ 20mA/HART</p> <p>供电电压: 24V DC</p> <p>过程连接: 螺纹/法兰/支架</p>	<p>Measurement Range: 0 ~ 6m、</p> <p>Capacitance Range: 0.1pF to 2000pF</p> <p>Accuracy: Class 0.5</p> <p>Operating Pressure: -0.1 ~ 2MPa</p> <p>Operating Temperature: -50℃ ~ 200℃</p> <p>Ambient Temperature: -40℃ ~ 85℃</p> <p>Output Signal: 4-20mA/HART</p> <p>Power Supply Voltage: 24V DC</p> <p>Process Connection: Thread/Flange/Bracket</p>



选型指南

Selection Handbook

TKWL-1700						
<b>传感器型式</b> <b>Sensor Type</b> 缆式 Cable Type 杆式 Rod Type	0 1					
<b>安装方式</b> <b>Installation Method</b> M20*1.5螺纹 M20*1.5 Thread G1螺纹 G1 Thread DN50法兰 DN50 Flange 其它 Other		A B C Z				
<b>输出信号</b> <b>Output Signal</b> 4-20mA 4-20mA+HART			1 2			
<b>电气接口</b> <b>Electrical Interface</b> M20*1.5 1/2NPT 特殊定制 Special Customization				0 1 X		
<b>探杆（缆）材质</b> <b>Probe (Cable) Material</b> 304+PTFE 316L+PTFE 特殊定制 Special Customization					A B X	
<b>探杆（缆）长度</b> <b>Probe (Cable) Length</b> <b>单位 (mm)</b> Unit (mm)						



# TKWL-1900系列射频导纳物位开关

## TKWL-1900 Series RF Admittance Level Switch

### 产品概述

#### Product Overview

TKWL-1900系列射频导纳物位开关是一种从电容式发展起来的、防挂料、更可靠、更准确、适用性更广的新型物位控制技术。射频导纳中导纳的含义为电学中阻抗的倒数，它由电阻性成分、电容性成分、感性成分综合而成，而射频即发射高频无线电波，所以射频导纳物位控制技术是通过高频无线电波测量被测介质导纳值来实现物位测量。

The TKWL-1900 series RF admittance level switch is a new type of level control technology that has evolved from capacitive sensors. It is designed to be immune to material buildup, more reliable, more accurate, and applicable to a wider range of applications. In RF admittance, "admittance" refers to the reciprocal of impedance in electrical terms. It is a combination of resistive, capacitive, and inductive components. RF, on the other hand, stands for radio frequency, indicating the use of high-frequency radio waves. Therefore, RF admittance level control technology measures the admittance value of the measured medium through high-frequency radio waves to achieve level measurement.

### 产品原理

#### Product Principle

射频导纳物位开关是基于射频电容技术，将无线电频率施加在探头上，对周围的环境进行连续分析，由于所有介质的介电常数和导电性均不同于空气，当探头接触到介质时所引起的微小电容量的变化被电路检测并转换成开关信号输出。其独特的抗粘附电路只对物位改变引起的电容量的变化产生反应，从而消除了由于物料堆积产生的虚假信号。

The RF admittance level switch is based on RF capacitance technology. It applies radio frequency to the probe and continuously analyzes the surrounding environment. Due to the different dielectric constants and conductivity of all mediums compared to air, the slight capacitance change caused by the probe's contact with the medium is detected by the circuit and converted into a switch signal output. Its unique anti-adhesion circuit only responds to capacitance changes caused by level variations, eliminating false signals caused by material buildup.

### 产品特点

#### Product Features

1、安装调试简易：全密封一体化安装结构，全部采用数字集成电路，无任何机械可动部件，一经安装校零无需多次调试；

2、低温漂：采用数字电器，与现有产品比较，大幅降低环境温度、湿度对仪表进行的影响，换季无需调零。先进的电路设计能避免物料粘附在探头所产生的虚假信号，又能抗各种波动所造成的影响；

3、现场适应性强：可在高温、高压、大粉尘、高粘度的场合中对固体及液体物料进行检测。

1. Easy Installation and Commissioning: The RF admittance level switch features a fully sealed integrated installation structure. It utilizes digital integrated circuits without any mechanical moving parts, eliminating the need for repeated calibration after installation and zero adjustment.

2. Low Temperature Drift: With digital electronics, the instrument is significantly less affected by environmental temperature and humidity compared to traditional products. It does not require zero adjustment during seasonal changes. The advanced circuit design can prevent false signals caused by material adhesion to the probe and resist the




impact of various fluctuations.

3. Strong Field Adaptability: The RF admittance level switch can be used for the detection of both solid and liquid materials in high-temperature, high-pressure, high-dust, and high-viscosity environments.

## 产品信息

### Product Information

 <p>TKWL-1900</p>	<p>供电：24VDC/220VAC 输出方式：SPDT/DPDT继电器 环境温度：-20~80℃ 介质温度：-40~200℃/-40~600℃ 工作压力：&lt;2MPa 绝缘护套：PPS、PTFE或陶瓷 灵敏度：0.5pF~750pF 过程连接：螺纹/法兰</p>	<p>Power Supply: 24VDC/220VAC Output Mode: SPDT/DPDT relay Operating Temperature: -20 to 80℃ Media Temperature: -40 to 200℃ / -40 to 600℃ Operating Pressure: &lt;2MPa Insulation Sheath: PPS、PTFE or ceramic Sensitivity: 0.5pF to 750pF Process Connection: Threaded/Flange</p>
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## 选型指南

### Selection Handbook

TKWL-1900							
<p><b>电气接口</b> <b>Electrical Entry</b> M20*1.5            M 1/2NPT            N 特殊定制            X Customized</p>							
<p><b>供电电压</b> <b>Power Supply Voltage</b> DC24V            A AC220V            B</p>							
<p><b>安装形式</b> <b>Installation Type</b> 一体式            1 Integral 分体式            2 Separate</p>							
<p><b>过程温度</b> <b>Process Temperature</b> -40~200℃            P -40~600℃            G</p>							



<div>探头材质</div> <div>robe Material</div> <div>304+PPS</div> <div>304+PTFE</div> <div>316L+PTFE</div> <div>304+陶瓷</div> <div>304+Ceramic</div> <div>316L+陶瓷</div> <div>316L+Ceramic</div> <div>特殊定制</div> <div>Customized</div>	<div>A</div> <div>B</div> <div>C</div> <div>D</div> <div>E</div> <div>X</div>	
<div>过程连接</div> <div>Process Connection</div> <div>NPT3/4螺纹</div> <div>NPT3/4 Threaded</div> <div>DN25法兰</div> <div>DN25 Flange</div> <div>DN50法兰</div> <div>DN50 Flange</div> <div>其它</div> <div>Other</div>		<div>1</div> <div>2</div> <div>3</div> <div>Z</div>
<div>探杆（缆）长度</div> <div>Probe (Cable) Length</div> <div>单位 (mm)</div> <div>Unit (mm)</div>		



# TKWL-2100系列音叉物位开关

## TKWL-2100 Series Fork Level Switch

### 产品概述

#### Product Overview

TKWL-2100系列音叉物位开关是通过压电晶体的谐振来引起其振动的，当受到物料阻尼作用时，振幅急剧降低且频率和相位发生明显的变化，这些变化会被内部电子电路检测到，经过处理后，转换成开关信号输出。该产品可以对料罐的高低位进行监测、控制和报警，适用于各种液体、粉末、颗粒状固体。

Overview The TKWL-2100 series fork level switch operates by inducing vibration in a piezoelectric crystal through resonance. When the fork comes into contact with the material, the amplitude decreases rapidly, and there are noticeable changes in frequency and phase. These variations are detected by the internal electronic circuitry, processed, and converted into switch signals. This product is designed for monitoring, control, and alarm functions for high and low levels in tanks, and it is suitable for various types of liquids, powders, and granular solids.

### 产品原理

#### Product Principle

音叉物位开关的工作原理是通过安装在音叉基座上的一对压电晶体使音叉在一定共振频率下振动。当音叉物位开关的音叉与被测介质相接触时，音叉的频率和振幅将改变，音叉物位开关的这些变化由智能电路来进行检测，处理并将之转换为一个开关信号。

The working principle of a fork level switch involves a pair of piezoelectric crystals mounted on the fork base, causing the fork to vibrate at a specific resonant frequency. When the fork of the level switch comes into contact with the measured medium, the frequency and amplitude of the fork will change. These changes are detected by the intelligent circuit of the fork level switch, processed, and converted into a switch signal.

### 产品特点

#### Product Features

- 1、运行真正免受流动、湍流、气流、泡沫、振动、固体含量、涂覆、液体特性以及产品变化的影响；
- 2、不需要标定而且所需要的安装工序最少；
- 3、极性不敏感而且具有短路保护功能；
- 4、无活动零件或缝隙真正实现免维护；
- 5、发光二极管指示，可依据习惯调整状态指示；
- 6、“快速滴落”的音叉设计对于粘性液体具有更快的相应时间。

1. Immune to the effects of flow, turbulence, air flow, foam, vibration, solid content, coating, liquid properties, and product variations.
2. Calibration-free and requires minimal installation procedures.
3. Insensitive to polarity and equipped with short-circuit protection.
4. Maintenance-free with no moving parts or gaps.
5. LED indication with adjustable status indication based on user preference.
6. "Fast-drop" fork design for faster response time, particularly suitable for viscous liquids.



产品信息

Product Information

  TKWL-2100	<p>供电：24VDC/220VAC 输出方式：SPDT/DPDT继电器 环境温度：-20~80℃ 介质温度：-40~120℃/-40~200℃ 工作压力：&lt;2MPa 介质密度：固体≥0.1g/cm³ 液体≥0.6g/cm³ 功耗：0.5W 过程连接：螺纹/法兰 防爆等级：ExdbIICT6 Gb</p>	<p>Power supply: 24VDC/220VAC Output mode: SPDT/DPDT relay Ambient temperature: -20~80℃ Media temperature: -40~120℃/-40~200℃ Operating pressure: &lt;2MPa Media density: Solid ≥ 0.1g/cm³, Liquid ≥ 0.6g/cm³ Power consumption: 0.5W Process connection: Thread/Flange Explosion-proof rating: ExdbIICT6 Gb</p>
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选型指南

Selection Handbook

TKWL-2100						
<p>电气接口 Electrical interface</p> <p>M20*1.5                    M 1/2NPT                    N 特殊定制                    X Customized</p>						
<p>供电电源 Power supply</p> <p>DC24V                    A AC220V                    B</p>						
<p>密封温度 Sealing temperature</p> <p>普通密封-40~120℃                    P Standard sealing -40~120℃ 高温密封-40~200℃ 带散热器                    G High-temperature sealing -40~200℃with heat sink</p>						



<b>探头材质</b> <b>Probe material</b> 304 316L 304+PTFE 316L+PTFE 304+PFA 316L+PFA 特殊定制 Customized		1 2 3 4 5 6 X
<b>过程连接</b> <b>Process connection</b> G1螺纹 G1 Threaded 卡箍50.5 Clamp 50.5 DN50法兰 DN50 flange 其它 Other		A B C Z
<b>防爆形式</b> <b>Explosion-proof type</b> 普通型 Ordinary type 防爆型 Explosion-proof type		P D
<b>插入深度</b> Insertion depth <b>单位 (mm)</b> Unit (mm)		







2024年版



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