上仪集团



UHZ-50/C 型系列侧装式磁性浮球液位计

UHZ-50/C Type Series of Side-mounted Magnetic Floating Ball Liquid Level Indicator


功能与适用范围

UHZ-50 型磁性浮球液位计（以下简称液位计）。用于工业过程中各种承压（或敞开）贮液设备（塔.缸.槽.球形容器和锅炉）的液体介质的液位检测。能就地显示各种液体的工作情况和液位高度。配上液位变送器就能远距离传送液面的位置信号。通过一定的电气装置达到自动控制和测量液位的目的。

液位计是具有可靠的安全性的检测仪表。由于具有磁性藕合的隔离密闭结构。尤其适用于易燃.易爆和腐蚀有毒液位的液体检测。从而使原复杂环境的液位检测手段变得简单和可靠安全。

液位计具有就地显示的直读式特性。不需多组液位计组合。有着单体进行全量程测量。设备少开孔，显示清晰，标志醒目。读数直观等优点。当液位计直接配带显示仪时可省去该系统信号检测的中间变送从而提高其传输精度。

工作原理

液位计采用连通器的原理。使容器内液体等高引入到液位计主体管内。在主体管内的漂浮的浮球组件，根据浮力原理和磁性藕合原理。在主体管外附靠着能反映磁现象的翻柱作为液面位置的显示。随主体管内液位的变化，浮球组件的高低也相应变化。从而使主体管外的翻柱作 180 度的翻转，当液位上升时，翻柱由白色转为红色，当液面下降时，翻柱由红色转为白色。显示器的红，白界位处为容器内介质液位的实际高度。从而实现液面的检测目的如图一所示。

Function & Application Range

UHZ-50 type magnetic floating ball liquid level indicator (abbreviated as the indicator) is used to test liquid level of media in storage devices (tower, vat, trough, ball-shape container and boiler) under pressure (or open). It could indicate status and height of various liquids. The liquid level signal could be transmitted from long distance with connection of the indicator and liquid level transmitter. With certain electric devices, automatic control & measuring of liquid level could be realized.

The indicator is reliable and safe testing instrument. It has isolated and sealed magnetic coupling structure, it is especially suitable for testing liquid level of inflammable, explosive, or corrosive media.

The indicator may clearly and directly display liquid level on the spot. Whole-range measuring could be realized with single body without need of multi sets of indicators. With displayer integrated with the indicator, transmission accuracy could be improved without intermediate transmitting procedures.

Working Theory

The indicator is based on U-tube flow theory. The liquid in container flows naturally into the indicator body. Based on buoyancy and magnetic coupling theory, liquid level could be displayed with the floating ball inside main body and revival pillar outside. The change of liquid level within main body results in position change of floating ball, which leads to revival of the pillar by 180℃. When liquid level rises, revival pillar turns from white to red, and when it falls, the pillar turns from red to white. The demarcation line between red and white indicates the actual level of the medium inside container.

特点：

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，显示方向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

Features:

1.It is suitable for measuring liquid level of media inside container on the spot, or in connection with transmitter andcontroller for long-distance transmission.
2.With direct and eye-catching display, and display directionmay be changed as user' demand.
3.With wide measuring range, without limitation of container height
4.With separation of displaying sets from tested medium, closely sealed, safe and reliable
5.With simple structure, convenient for installation, easy for maintenance
6.With corrosion-resistant & explosion-proof performance.

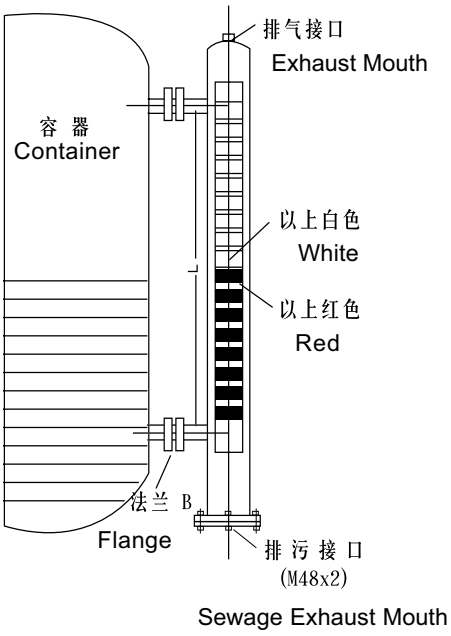


Figure 1 Working Theory

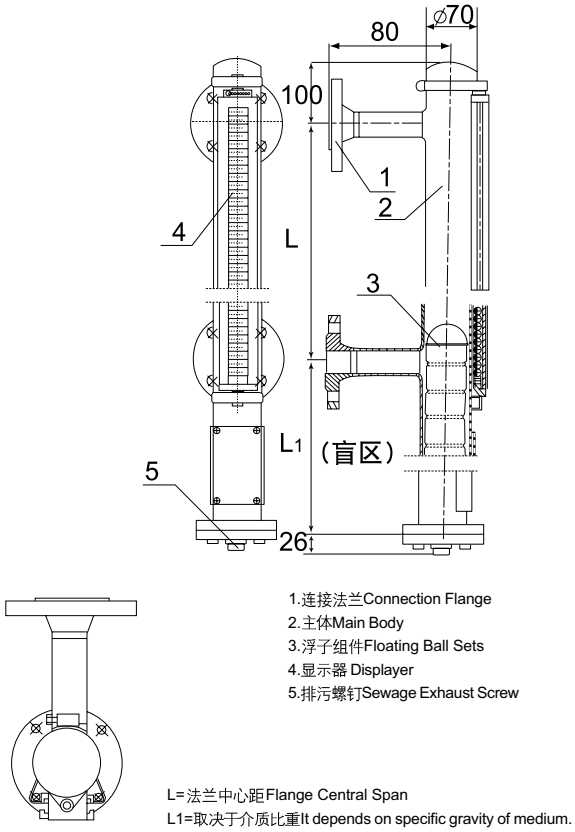


Figure 2a (Basic Type)

结构与外形尺寸

(1):基本型(图二 a)

Structure & Size

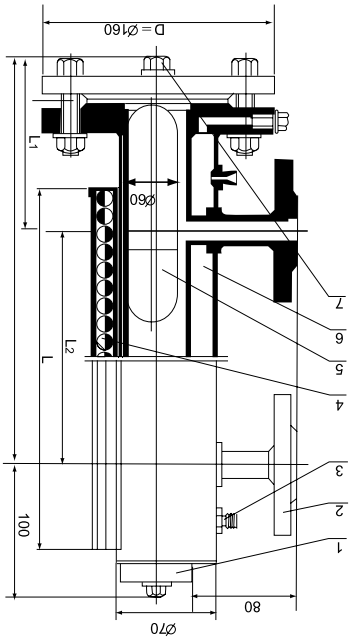
(1)Basic Type(Figure 2a)



(2):夹套型：（图二 b） (2)Sleeve Tube Type (Figure 2 b)

1. 主体
2. 连接法兰
3. 蒸气接头
4. 显示器
5. 浮子组件
6. 夹套管
7. 排污螺钉

1.Main Body
2.Connection Flange
3.Vapor Connector
4.Displayer
5.Floating Ball Sets
6.Sleeve Tube
7.Sewage Exhaust Screw



蒸气接口尺寸：M22 × 1.5 外螺纹内球面通径 10

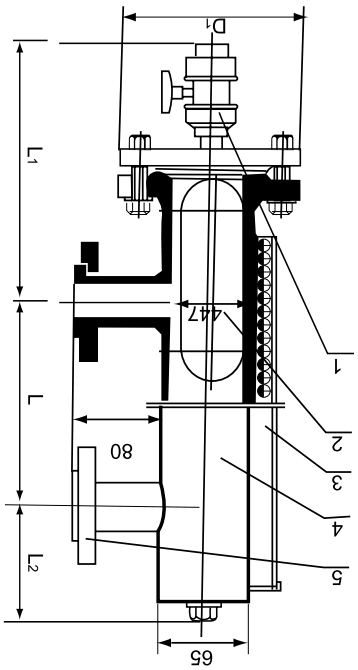
Vapor Connection Sizes: M22 × 1.5 Outer Thread Inner Ball Surface Diameter 10

主体材料 Main Body Material	法兰材料 Flange Material	夹套材料 Sleeve Tube Material
Φ 70 不锈钢 Φ 70 Stainless Steel	碳钢 Carbonized Steel	Φ 89 不锈钢 Φ 89 Stainless Steel
Φ 70 不锈钢 Φ 70Stainless Steel	不锈钢 Stainless Steel	Φ 89 不锈钢 Φ 89Stainless Steel
316L	316L	不锈钢 Stainless Steel

（3）防腐型（图二 c） (3) Corrosion-resistant Type (Figure 2 c)

1. 排液阀
2. 浮子组件
3. 显示器组件
4. 主体管
5. 活套连接法兰

1.Liquid Exhaust Valve
2.Floating Part Sets
3.Displayer Part Sets
4.Main Body
5.Tube Connection Flange



主体材料 Main Body Material	活套法兰 Tube Flange	排液阀 Liquid Exhaust Valve
PVC	碳钢 Carbonized Steel	PVC
PP	碳钢 Carbonized Steel	PP

主要技术参数

1．测量范围：0-300mm、0～6000mm
2．测量精度：± 10mm
3．介质密度：⩾ 0.5g/cm³
4．工作压力：1.0,1.6,2.5,4.0MPa
5．工作温度：A=80℃ B=120℃ C=200℃D=300℃
6．介质粘度：⩽ 0.4Pa.S（在介质条件下，L 对粘度大或低温时易结晶介质要选用加热夹套）
7．测量界位比重差：⩾ 0.15g/cm³
8．本厂出厂连接法兰尺寸：DN20 PN2.5（公制管）
9．连接法兰采用化工部 1998 年发布的 HG20592-20635-97 法兰标准。若采用其它法兰标准请用户在订货时注明。法兰连接孔分布形状：正方形。

Main Technical Parameters

1.Measuring Range: 0-300mm、0～6000mm
2.Measuring Accuracy: ± 10mm
3.Medium Density: ⩾ 0.5g/cm³
4.Working Pressure:1.0、1.6、2.5,4.0MPa
5.Working Temperature:A=80℃ B=120℃ C=200℃D=300℃
6.Medium Viscosity: ⩽ 0.4Pa.S (L: The thermal clamp tube should be adopted for medium with high viscosity and crystallization under low temperature.)
7.Specific Gravity Difference between Measuring Positions: ⩾ 0.15g/cm³
8.Manufacturer Connection Flange Size:DN20 PN2.5 (metric tube)
9.We generally adopt connection flange stipulated in HG20592-20635-97 standard issued in 1998 by Ministry of Chemical Industry. It should be indicated in ordering for demand on other type flange. Flange connection distribution figure: square

有关参数选用

Parameters Contrast

防腐型材料（见表一）

表一 Form 1

Material of Corrosion-resistant Type (see Form 1)

代号 Code	名称 Description	适用范围 Application Range
PVC	聚氯乙烯 PVC	水.污水.轻微的腐蚀液体 Water, sewage, lightly corrosive liquid
PP	聚丙烯 PP	耐酸.碱.油脂.油和油剂 Resisting acid, alkali, grease & oil
PE	聚乙烯 PE	耐烯酸.碱.酒精汽油溶 剂 Resisting diluted acid, alkali, alcohol, gasoline solvent
PTFE	聚四氟乙烯 PTFE	耐所有化学品 Resisting chemicals
PVDF	聚偏氟乙烯 PVDF	耐油和油脂、酸.碱溶剂 Resisting oil, grease, acid and alkali solvent
PUR	聚氨脂 PUR	耐燃料、热油和油的液体（热） Resisting fuel, hot oil and greasy liquid
PA	聚酰胺 PA	耐油.油脂溶剂 Resisting oil, greasy solvent

国内外常用不锈钢材料对照表（见表二）

表二 Form 2

Stainless Steel Material Code Contrast Form (see Form 2)

中国China	美国U.S.A.	德国 Germany	日本 Japan
1Cr18Ni9Ti	321	1.4783	SUS32
0Cr18Ni2Mo2Ti	316	1.4571	
0Cr17Ni12Mo2	316	1.4401	SUS316
00Cr17Ni14Mo2	316L	1.4435	SUS316L
0Cr18Ni9	304	1.4301	SUS304

液体介质密度与沉筒距对照表（见表三）

表三 Form 3

Contrast Form between Liquid Media & Span L1 (see Form 3)

液体介质密度 Media Density(g/cm³)	沉筒距 Span(L1mm)	常用液体介质 Media Description
0.45~0.60	450~600	液化石油气. 液氨 LPG, fluid ammonia
0.61~0.74	300~500	汽油. 丁二烯 Gasoline, butene
0.75~0.85	250~300	甲醇. 轻油. 二甲苯 Methane, light oil, toluene
0.86~0.99	220~250	丙酮. 啤酒 Acetone, beer
1.00~1.10	200~220	水. 醋酸 Water, acetic acid
1.11~1.25	170`200	盐酸. 焦油 Hydrochloric acid, tar
1.26~1.39	160~170	液碱.20% 稀硫酸 Fluid alkali, 20% diluted sulphuric acid
1.40~1.59	150~160	液氯，氯仿. 浓硫酸 Fluid chlorine, chloroform, dense sulphuric acid
1.60~2.00	120~150	氟油.98% 硫酸 Fluorine Oil, 98% sulphuric acid



产品选型标记 Type Selection Example

产品系列代号 Product Code	UHZ-50/C 型磁性浮球液位计 UHZ-50/C Type Magnetic Floating Ball Liquid Level Indicator

系列型号 Serial Code	C1	C2	C3
	基本型 Basic Type	夹套型 Clamp Tube Type	防腐型 Corrosion-proof Type

主体材质 Main Body Material		
	1	1Cr18Ni9Ti（连接法兰为碳钢)(Carbonized steel for connection flange)
	2	全(Whole)1Cr18Ni9Ti
	3	316
	4	316L
	5	PVC 适用防腐型
	6	PP Suitable with corrosion-proof type

连接法兰型式 Connection Flange Type	G	Y	T
	平焊法兰 Horizontal welded flange	凸面法兰 Convex flange	活套法兰 Sleeve flange

排污法兰 Exhaust Flange	
F	盲板排污法兰 Blind Board Sewage Exhaust Flange （DN20 PN2.5）
L	排污法兰配排污螺钉 Sewage Exhaust Flange Attached with Exhaust Screw
P	排污法兰配排污阀 Sewage Exhaust Flange Attached with Exhaust Valve

	配套仪表与安装型式 Instruments Attached & Installation Type
0 光显示. 无配套仪表 Light display, without attached instrument	
1 上接线盒式配 U_R 变送器 Upper Connection Box with U_R Transmitter Attached	
2 下接线盒式配 U_R 变送器 Lower Connection Box with U_R Transmitter Attached	
3 上接线盒式配 U_B 变送器 Upper Connection Box with U_B Transmitter Attached	
4 下接线盒式配 U_B 变送器 Lower Connection Box with U_B Transmitter Attached	
5 上接线盒式配 U_K 控制器 Upper Connection Box with U_K Transmitter Attached	
6 下接线盒式配 U_K 控制器 Lower Connection Box with U_K Transmitter Attached	

		接线盒型式 Wire Connection Box Type
O 无接线盒	Without wire connection box	
S 普通防水型	Common water-proof type	
D 隔爆 EXd Ⅱ BT4～6	Explosion-isolated EXd Ⅱ BT4~6	
E 本安 Exia Ⅱ CT4～6	Intrinsic safety Exia Ⅱ CT4~6	

测量范围 Measuring Range (mm)	
D 开口容器 Container with open mouth	工作压力 MPa
□ 工作压力 Working Pressure	Working Pressure MPa

工作温度℃ Working Temperature℃

介质密度 g/cm³ Medium Density g/cm³

UHZ-50/C □ □ □ □—□ □—□—□—□—□

选型举例：

测量一个承受容器，工作压力0.6MPa；t=80℃ 测量范围：2000mm。介质为轻油（0.8 比重）要求耐腐蚀材质(1Cr18Ni9Ti).平焊法兰。配排污螺钉。上接线盒式（隔爆）的输出4-20mA.侧装式： UHZ-50/C1 1GL-3D-2000-0.6-80℃-0.8

应用须知：

1．侧装式液位计与被侧容器的上下分液管间最好各装一只截止阀门以便打开或关闭液位计；另一方面为维修液位计带来方便。
在上下截止阀关闭时。可打开液位计底部 排污法兰或卸下排污螺钉，注入清水即可清洗液位计的主体。

2．安装液位计。法兰中心线垂直度∠4‰.当液位计的测量范围大于3米时。需要考虑增加中间加固法兰（或耳朵攀）作固定支撑以增加强度。

3．配套远传液位计变送器与二次仪表之间连线，则要求连线的芯线截面面积应大于0.8mm^2.与交流电源同路平行铺设时，至少应保持20厘米以上的间距，最好单独穿铁管铺设，或用屏蔽二芯电缆铺设，屏蔽层只能一端接地。

4．选用液位控制器，其触点容量，均以阻性负载设计如用非阻性或大功率负载则要用中间继电器转换。

5.对液体介质中含有悬浮杂质和亲磁物质的场合，不宜使用本液位计（因这些杂质会对浮子组件造成卡阻）。

6.外形结构图中的“L1”为侧装式液位计的“沉筒距”此参数用户必须了解，该参数与介质密度有关，根据浮力原理，浮子组件的长度与介质密度有关，故在选用，设计时必须要考虑不同的介质有不同的L1详细参数表三（仅作参考）

安装使用和维护

1. 液位计安装必须垂直，以保证浮球组件在主体管内能上下运动自如（如图三所示）
2. 最好在容器与液位计之间装截止阀，以便清洗和检修液位计时切断物料。
3. 液位计主体管周围不容许有导磁体靠近，否则直接影响液　位计正常工作。
4. 液位计安装完毕后，需要用磁钢进行校正，对翻柱导引一次使零位以下显示红色，零位以上显示白色。

The indicator of corrosion-proof material with horizontal welded flange (1Cr18Ni9Ti) and sewage exhaust screw is used to measure liquid level of light oil (specific gravity0.8) in container under pressure of 0.6Mpa and temperature of 80℃ within range of 2000mm. The output of that with upper wire connection box (explosion-proof type) is 4~20mA. The indictor is to be mounted on the side.Type Selection: UHZ-50/C_1 1GL-3D-2000-0.6-80℃-0.8

Notices in Application

1.Two cut-off valves should be mounted respectively between indicator and upper branch tube and lower branch tube for open and close of indicator and also for maintenance. When both valves are closed and exhaust flange on bottom of indictor is opened or exhaust screw is unloaded, clean water should be poured into for cleaning.

2.Flange center line vertical angle ∠4‰ When measuring range of the indicator is more than 3 meters, strengthening flange (or side handles) should be added as support to increase strength.

3.The cross section area of connection wire between long-range transmitter and concerned meter should be more than 0.8mm^2. The distance of more than 20 cm should be kept if the wire is laid in parallel with A.C. power line. The first choice is shielded 2 cores cable laid in steel tube with ground connection of one end of shielding layer.

4.The contact point capacity of the indicator is based on resistance loading design. The repeater should be adopted for transformation for design of non-resistance or big power loading.

5. The indicator should not be used for media with suspended impurity or magnetic affinity material. (The impurity might result in obstruction of floating part.)

6.The user should know about float span, or L1 in Structure Figure of the indicator.The parameter concerns medium density. According to buoyancy theory, the length of floating sets concerns medium density. Therefore, it should be taken into consideration in selection and design that different media suit with different float span L1. (PLS see Form 3 for reference only.)

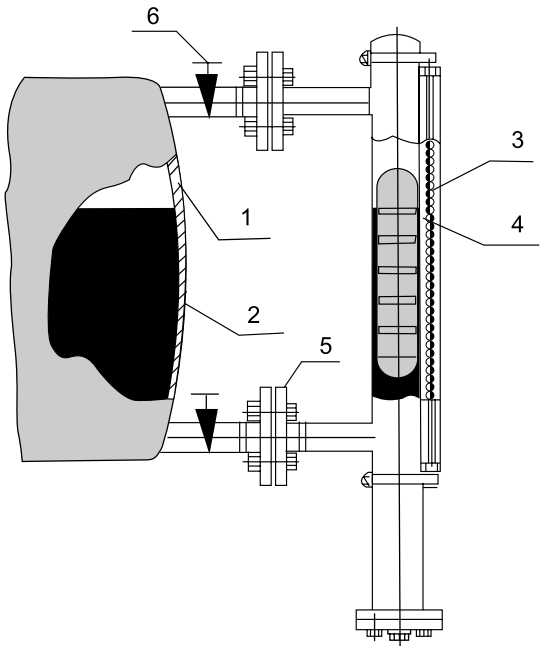
Installation, Usage & Maintenance

1.It should be mounted vertically to ensure free move of floating ball part within the tube. (as Figure 3)
2.It is suggested to mount cut-off valve between container and the indicator for convenience of cutting off medium in washing and repairing the indicator.
3.There must be no magnetic conductive material near main body of the indicator. Otherwise normal working of it would be affected.
4.After installation completion, it should be rectified with magnet steel attracting pillar for once revival resulting in that part below zero point is red and that above zero point is white.



5. 液位计投入运行时应先打开下引液管阀门让液体介质平稳进入主体管，避免液体介质带着浮球组件急速上升，而造成翻柱翻转失灵和乱翻。（若发生此现象待液面平稳后可用磁钢重新校正。）
6. 因运输过程中为了不使浮球组件损坏，故出厂前将浮球组件取出液位计主体管外。待液位计安装完毕，打开底部排污法兰，再将浮球组件重新装入主体管内，注意浮球组件重的一头朝上，不能倒装。
7. 根据介质情况，可定期打开排污法兰清洗主体管内沉淀物质。

5.The lower valve should be opened to make liquid flow into the tube stably avoiding sharp rise with floating ball part resulting in being out of order. (If it appears, it should be rectified again with magnetic steel after its stability.)
6.The floating ball part should be taken out of main tube of the indicator before delivery to keep it from damage during transportation. It will be installed again into the tube with cautions of keeping its heavier end upside after completion of installation the indicator, and opening sewage exhaust flange on the bottom.
7.You may open sewage exhaust screw for cleaning depending on medium situation.



1.容器
2.被测介质
3.显示器组件
4.浮球组件
5.连接法兰
6.截止阀

1.Container
2. Medium to Be Tested
3. Displayer Sets
4. Floating Ball Sets
5. Connection Flange
6. Cut-off Valve

图三 安装图　　Figure 3 Installation Figure

订货须知

1．型号规格
2．被测介质名称和密度
3．工作压力
4．工作温度
5．测量范围
6．连接法兰（标准）
7．配套仪表
8．特殊要求

Notices for Order

1.Type & specification
2. Name & specification of medium to be tested
3. Working pressure
4. Working temperature
5. Measuring range
6. Connection flange (Standard)
7. Instrument attached
8. Special demands