

UTM series float liquid (boundary) level

transmitter

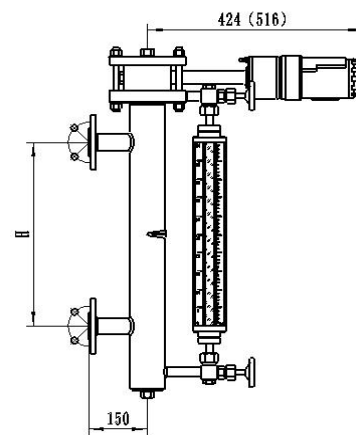
Overview

UTM series intelligent torsion tube buoy liquid level transmitter is our company's own research and development of field data processing liquid level control instrument. Buoyancy drives the torsion tube and the core shaft to produce the angle change, at the same time also changes the sensor signal in the transmitter, this signal passes through the advanced signal processor, outputs the standard current signal 4-20 mADC, uses the backlight liquid crystal display. The processor has the functions of linearization, measurement error, automatic temperature compensation, HART communication and so on. The float level transmitter can be used to control and measure the liquid level, boundary or density of the medium. This series of products is widely used in petroleum, chemical, electric power, metallurgy, food, paper, environmental protection and other industries.



Characteristics

- Torque tube
- Smart Output 4-20 mA Overlay HART Protocol
- High sensitivity
- Anti-jamming
- LCD backlight display
- Field keys and hand manipulators can be debugged, easy to debug
- The comprehensive technical index is superior to the foreign similar products
- The measuring room can add the visual function in the field, and the liquid level in the buoy can be observed directly through the visual part of the



measuring room, which is convenient for the user to install, debug and use. This product is the company patent product, patent number :200520091104

Visual Float Appearance

Technical parameters

Level of accuracy :0.5%

Range :300~3000 mm(or special manufacture)

Medium density :0.4~1.5 g/cm³(liquid level) density difference ≥ 0.05 g/cm³(Boundary)

Nominal pressure :1.6~42 MPa

Medium temperature :-100~400°C

Temperature :-40~70°C

Output signal :4-20 mA overlay HART protocol

Electrical interface: M20×1.5(or NPT 1/2")

Process connection: implement manufacturer's standards DN40、 DN50 special requirements

Heat tracing interface: G1/2"

Thermal pressure :≤0.6 MPa

Explosion-proof form: intrinsically safe: E x ia IICT 4/T5/T6

flameproof: E x dIICT 4/T5/T6; type

Class of protection: IP65

UTZ series intelligent float liquid (boundary) level transmitter

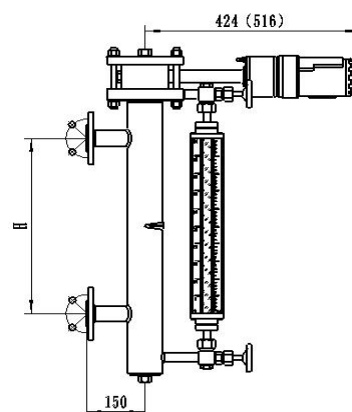
Overview

UTZ series intelligent buoy liquid level transmitter is a product produced by Dandong Energy resistant instrument Electrical Co., Ltd and Fisher Control equipment Company. A part of the transmitter is introduced into the DLC3000 transmitter produced by Fisher Control equipment Co., Ltd., and the buoy liquid level sensor (inner cylinder assembly) and the measuring room part are manufactured by our company. The product is widely used in liquid level control and measurement in petroleum refining, chemical, thermal power plant, metallurgy, pharmaceutical, light industry and other industries.



Characteristics

- Intelligent :275 or 375(with HART) communication, with query, configuration, marking, testing and other functions. The instrument communication is superimposed on 4~20 mA the same two-wire circuit, and the data communication can be carried out simultaneously without interrupting the process signal.
- High sensitivity: Hall element sensor can detect trace angle signal, the instrument is suitable for small specific gravity, interface measurement.
- Good stability: because the sealed Hall element can provide no interference signal, the built-in filter in the controller can filter out the interference of output signal due to liquid level fluctuation.
- Strong anti-interference: because the controller shell and junction box are equipped with anti-electromagnetic interference filter, the anti-interference ability of the instrument is increased.
- The measuring room part can have visual function, and the liquid level condition in the buoy can be observed



directly through the visual part of the measuring room, which is convenient for the user to install, debug and use. This product is the company patent product, patent number :200520091104

- Visual Float Appearance

Technical parameters

Supply voltage :12~30 V DC

Output signal :4~20 mA overlay HART protocol

Level of accuracy :0.5%,1.0%

Operating temperature :-100~400°C

Temperature :-40~70°C

Relative humidity :0~95 per cent

Nominal pressure :1.6~42 MPa

Heat tracing pressure :0.6 MPa

Range :300~3000 mm (or special manufacture)

Minimum density or minimum density difference :≥0.1 g/m³

Electrical connection: NPT 1/2"

Explosion-proof form: intrinsically safe E x ia IICT 6; flameproof type: E x d IIC T 5Gb

Class of protection: IP66

Calculation Formula of Liquid Buoyancy and Calculation Method of Comparison

1、 Buoyancy calculation

Measuring liquid level	Symbol Content and Unit	Measuring boundary value
$F = \frac{\pi D^2 \times H \times \rho}{4}$	D inner tube diameter	$F = F_1 - F_2$
	cm H inner tube length	
	Medium density g/cm ρ measuring liquid level ³	
	Medium density g/cm ρ1 measuring liquid level ³	$F_1 = \frac{\pi D^2 \times L \times \rho_1}{4}$
	Medium density g/cm ρ2 measuring liquid level ³	
	When F liquid level is medium buoyancy, interface is medium buoyancy difference g	$F_2 = \frac{\pi D^2 \times L \times \rho_2}{4}$
F 1 medium buoyancy G F2 light medium buoyancy g		

2、 Calculation method of calibration

a、 Water school law

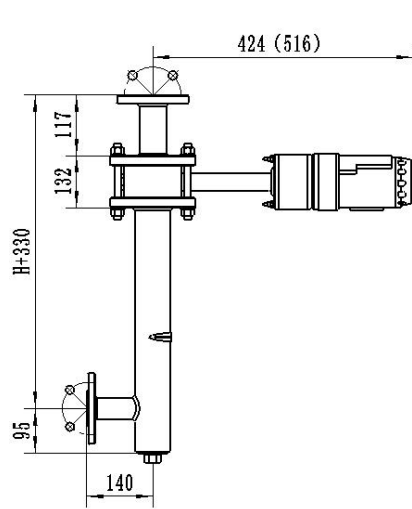
Measuring liquid level	Symbol Content and Unit	Measuring boundary position
L ₀ =0	L ₀ cm of zero water level	L ₀ =Hρ ₂
	L _m Height of full range water level cm	
	cm H range	

$L_M = H\rho$	g/cm of density of medium measured ρ liquid level ³	$L_M = H\rho_1$
	ρ_1 Density g/cm of medium measured at boundary position ³	
	ρ_2 Density g/cm of light medium measured at boundary position ³	

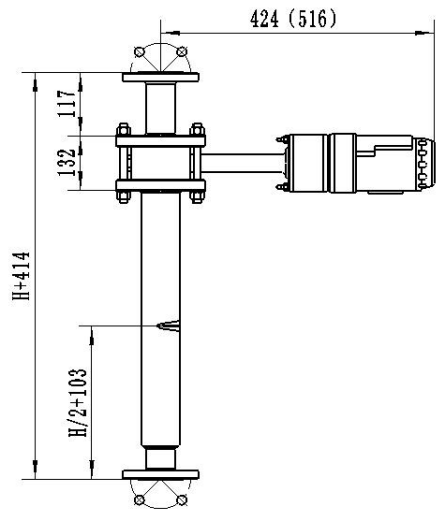
b、 Hanging weights

Measuring liquid level	Symbol Content and Unit	Measuring boundary position
$G_0 = G$	G_0 Weight g at zero	$G_0 = G - F_2$
	G_0 Weight value g for full range	
	Weight g G inner cylinder	
$G_m = G - F$	g of buoyancy F liquid level	$G_M = G - F_1$
	F_1 Buoyancy g of Heavy Medium at Boundary Position	
	F_2 g of buoyancy of light medium at boundary	

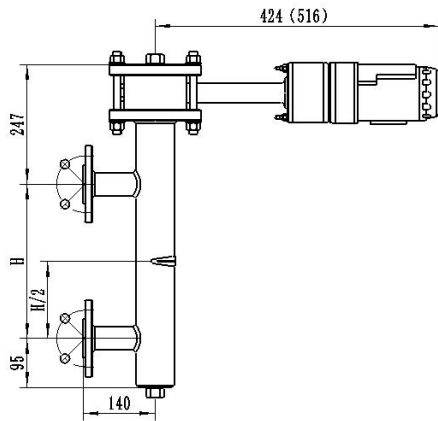
Dimensions



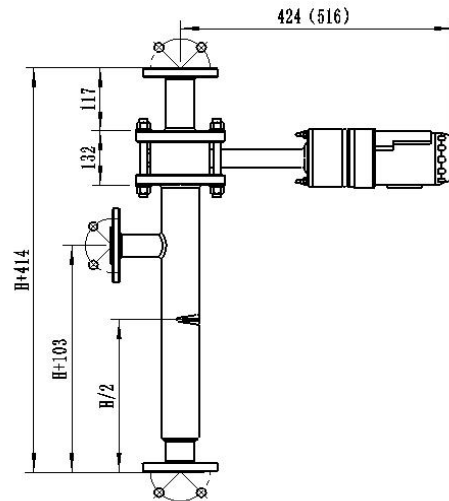
Topside Type



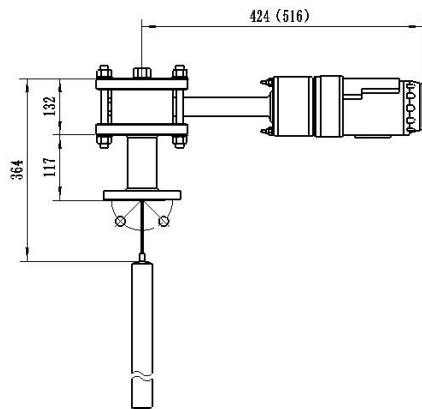
Top bottom



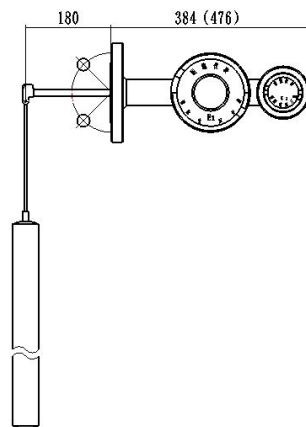
Side by Side



Bottom Side



Top Type



Side placement

Product selection

Model	Specification number			Content description
UTZ-				Intelligent torsion tube float liquid (boundary) level transmitter
UTM-				Intelligent torsion tube float liquid (boundary) transmitter (domestic)
Type	S			Field visual
Measurement methods	1			Level measurement
	2			Boundary survey
	3			Density measurements
Installation mode	A			Topside
	B			Top bottom
	C			Lateral
	D			Bottom Side
	E			Top Type
	F			Side placement
Pressure rating	2			1.6,2.0 MPa (Cass 150)
	3			2.5 MPa
	4			4.0 MPa
	5			5.0 MPa (Class300)
	6			MPa 6.3
	10			10.0 MPa
	11			11.0 MPa (Cass 600)
	15			15.0 MPa (Class 900)
	16			16.0 MPa
	25			25.0 MPa
	26			26.0 MPa (Class1500)
42			42.0 MPa (Cass 2500)	
Outer barrel material	T			Carbon steel
	H			Stainless steel :0 Cr18Ni9(304)
	R			Stainless steel :00 Cr17Ni14Mo2(316L)
	F			Stainless steel PTFE
	X			Other material (or according to actual material)
Working temperature	D			Medium temperature -20°C~100°C
	G			Medium temperature 100°C~400°C
Explosion proof rating	i			Benam
	D			flameproof
Annex			B	External tube heating
Scope of measurement				L mm of measurement range

The UTZS1C4TGIB800 is DLC3000 transmitter intelligent torsion tube buoy liquid level transmitter, field visible type, side type, pressure grade 4.0 MPa, intrinsically safe type, outer material carbon steel, medium temperature 120°C, with heat tracing, measuring range 800 mm.

