User Manual

SÉRIE

WHLS-2000UF

Medidor de vazão
Ultrassônico por Inserção

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REV. 01/2022

1. Profile

WHLS-2000UF series Ultrasonic Flow/Heat Meter is the new product, which is designed strictly according to JJG1030-2007 standard to develop the reliability of protection class. Ultrasound transmit time principle makes the measurement range from DN25 to DN6000. The advantages include high accuracystrong anti-interference, reliability and stability, multiple interface. Each parts can achieve to IP68, enable the meter work in any severe environment.

2. Technical data of Flow transmitter

Item		Description
Converter	Principle	Time-difference method
	Accuracy	Inline type: flow meterÖ ±0.5%× heat meteÖ ±1.0% Clamp on typeÖ flow meter:±1.0%; heat meter:±2.0% Insertion type: flow meter:±1.0%; heat meter:±2.0%
	Operation	4-key manipulation with magnetic pen touch or finger touch; simulation keyboard software
	Output	One way 4~20mA analog output,electric resistance:0~1k,accuracy:0.1%
		One way OCT pulse signal output
		One way Relay output
	Input	3 way 4~20mA analog input,accuracy:0.1%;Acquisition signal of temperature,press and liquid level
		Achieve heat measurement by connecting 3-wired PT100 temperature transducers
	Data interface	RS485 serial interface,upgraded by computer, support MODBUS communication protocol
Special cable	Twisted-pair shielded cable and cable length should be no more than 50 m .Transmission distance can achieve 1 km, if select the RS 485 interface	
Pipeline	Pipe mateial	Steel, stainless, cast iron ,copper,cement,PVC,aluminum, glass steel,etc.
	Pipe diameter	DN15mm~DN6000mm
	Straight pipe requirement	Transducers installation points should be:10 diameters' straight pipeline from upstream transducer; 5 diameters' straight pipeline from the downstream transducer;30 diameters' straight pipeline from the pump
Fluid	Liquid type	Single liquid that can conduct sound wave, such as water, seawater, sewage, plant effluent, chemicals, alcohol, beer, oil, etc.
	Fluid Temp.	-30 ~160
	Turbidity	10000ppmÈ with little bubble
	Fluid velocity	0m/s~7m/s
Working Environment	Temperature	Converter:-20 ~60 ; Transducer:-30 ~160
	Humidity	Both of the converter and transducer work under water, depth underwater 2m. (After completely sealing)
Power supply	DC8~36V; AC85~264V(optional) 1.5W	
Power Consumption: 1.5W		

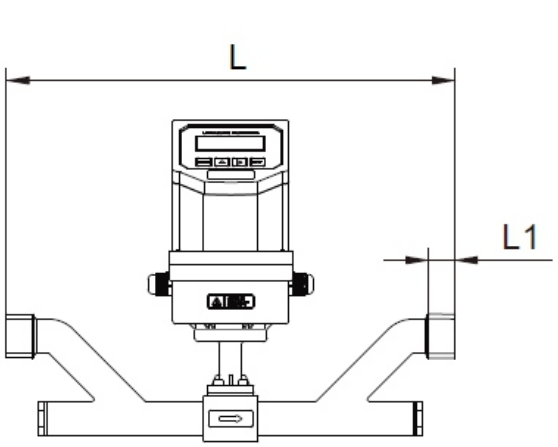
3. In-line type Ultrasonic flow meter

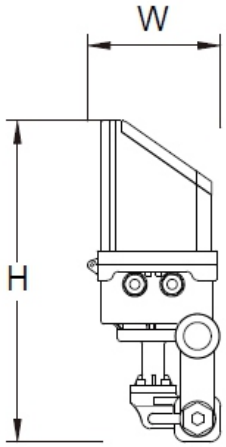
3.1 πType Inline Ultrasonic Flow Meter (DN15mm~DN32mm)

Measuring Diagram

Thread connection	Flange connection
	

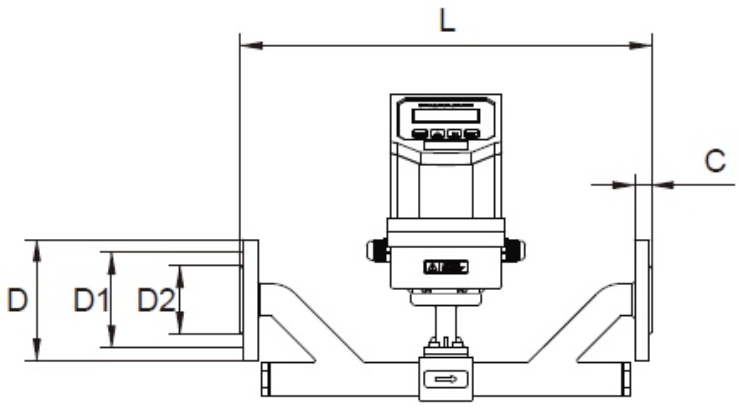
Dimension of thread connection (Thread standard: GB/T7307-2001) Unit: mm

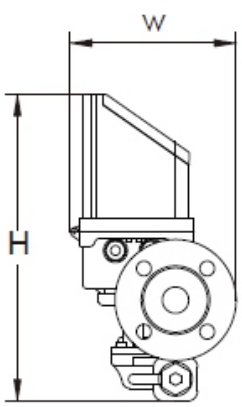




DN	Pressure rating	L	W	H	L1	Thread Spec.
DN15	2.5 Mpa	320	121	285	13	G 3/4 B
DN20	2.5 Mpa	360	121	285	15	G 1 B
DN25	2.5 Mpa	390	121	292	16	G 1 1/4 B
DN32	2.5 Mpa	450	121	292	22.5	G 1 1/2 B

Dimension of flange connection, Unit: mm (Standard of Flange: GB/T 9119-2000)





DN	Pressure rating	L	W	H	Flange Dimension					
					D	D1	D2	d x n	C	Bolt
DN15	2.5 Mpa	320	148	285	95	65	46	14 x 4	14	M12x50
DN20	2.5 Mpa	360	153	285	105	75	56	14 x 4	16	M12x50
DN25	2.5 Mpa	390	158	292	115	85	65	14 x 4	16	M12x50
DN32	2.5 Mpa	450	170	292	140	100	76	18 x 4	18	M12x60

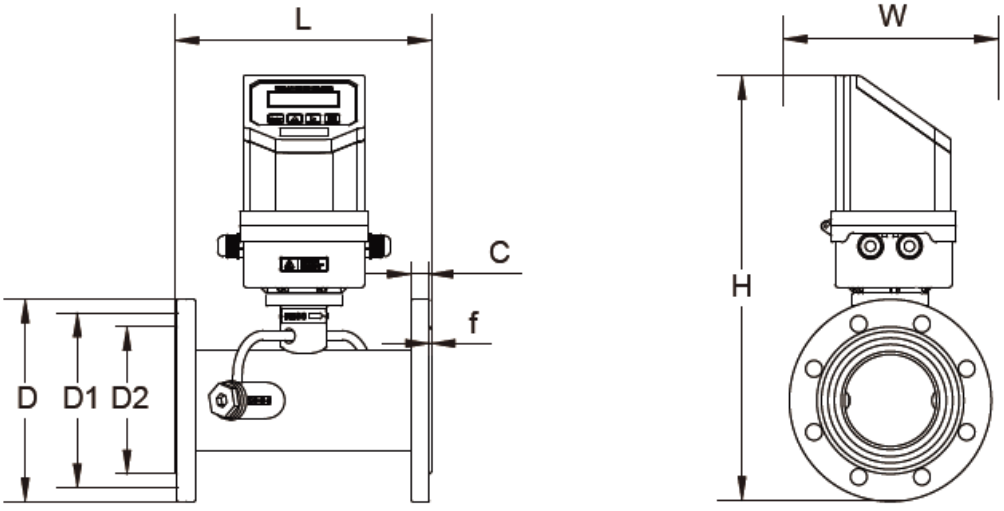
D: flange Out diameter, **D1:** Bolt hole centers distance, **D2:** sealing face diameter, **C:** flange thickness, **d:** bolt hole diameter, **n:** bolt hole quantity

3.2 Standard Inline type Ultrasonic Flow Meter (DN40mm~DN1000mm)

The measuring range of Standard inline type ultrasonic flow meter is DN40mm~DN1000mm, with high protection class of IP68, measuring fluid temperature of -30 ~160 , pressure range of 0~2.5Mpa, high accuracy within ±0.5 Please refer to page14 for detailed parameters

Measuring Diagram

Dimension (Standard Of Flange: GB/T 9119 -2000 for DN40~300, JB/T81-94 for DN350~1000) Unit: mm



DN	Pressure rating	L	W	H	Flange Dimension					
					D	D1	D2	d x n	C	Bolt
40	1.6 Mpa	300	150	336	150	110	84	18 x4	18	M16 x60
50	1.6 Mpa	300	165	349	165	125	99	18 x4	20	M16 x70
65	1.6 Mpa	300	185	366	185	145	118	18 x4	22	M16 x70
80	1.6 Mpa	225	200	381	200	160	132	18 x8	20	M16 x80
100	1.6 Mpa	250	220	401	220	180	156	18 x8	22	M16 x80
125	1.6 Mpa	275	250	428	250	210	184	18 x8	22	M20 x80
150	1.6 Mpa	300	285	459	285	240	211	22 x12	24	M20 x90
200	1.6 Mpa	350	340	511	340	295	266	26 x12	26	M22 x90
250	1.6 Mpa	450	405	569	405	355	319	26 x12	28	M22 x90
300	1.6 Mpa	500	460	621	460	410	370	23 x16	32	M22 x90
350	1.0 Mpa	550	500	666	500	460	428	25 x16	28	M20 x80
400	1.0 Mpa	600	565	697	565	515	482	25 x20	30	M22 x90
450	1.0 Mpa	700	615	774	615	565	532	25 x20	30	M22 x90
500	1.0 Mpa	800	670	826	670	620	585	30 x20	32	M22 x90
600	1.0 Mpa	1000	780	931	780	725	685	25 x24	36	M27 x110
700	0.6 Mpa	1100	860	1021	860	810	775	30 x24	32	M22 x90
800	0.6 Mpa	1200	975	1129	975	920	880	30 x24	32	M27 x100
900	0.6 Mpa	1300	1075	1229	1075	1020	980	30 x24	34	M27 x100
1000	0.6 Mpa	1400	1175	1329	1175	1120	1080	30 x28	36	M27 x110

D: flange Out diameter, **D1:** Bolt hole centers distance, **D2:** sealing face diameter, **C:** flange thickness,
d: bolt hole diameter, **n:** bolt hole quantity

4. Inline type Ultrasonic Flow & Heat Meter

It can achieve to heat measurement by connecting 3 way PT100 transducer. Accuracy:±1.0%, Heat meter's dimension is the same as In-line ultrasonic flow meter, except that the height increased 70mm.

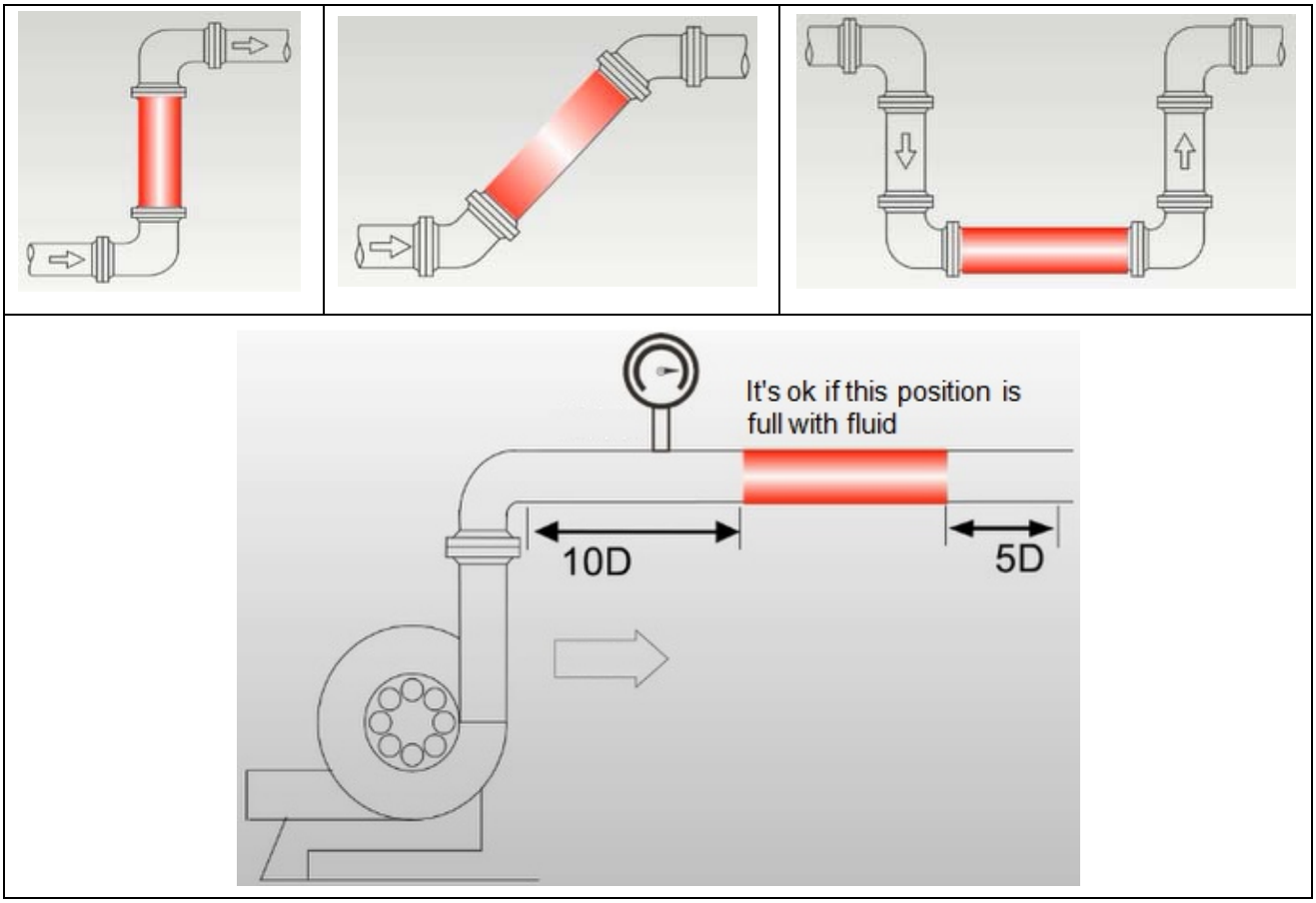
Measuring Diagram

Optional Temperature sensor (3-wired PT100)

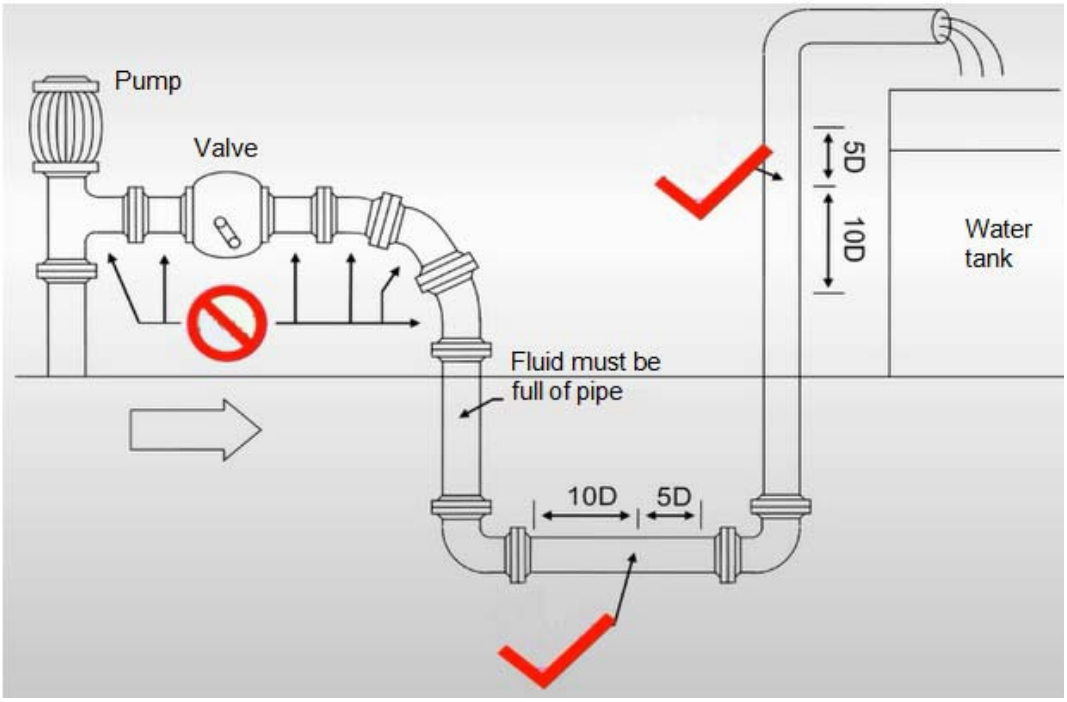
Picture	Description	Model	Suitable Pipeline	Op. Temp.	Accuracy
	Clamp-on temperature sensor Pt100, not contact fluid	WT-1	DN50	-40 ~ 160	100 ±0.8
	Insertion temperature sensor Pt100, contact fluid	TWT-1	DN50	-40 ~ 160	100 ±0.8
	Insertion temperature sensor Pt100, contact fluid, can install under pressure	PWT-1	DN50	-40 ~ 160	100 ±0.8
	Insertion temperature sensor Pt100, contact fluid, for small pipeline size	SWT-1	Ø DN50	-40 ~ 160	100 ±0.8

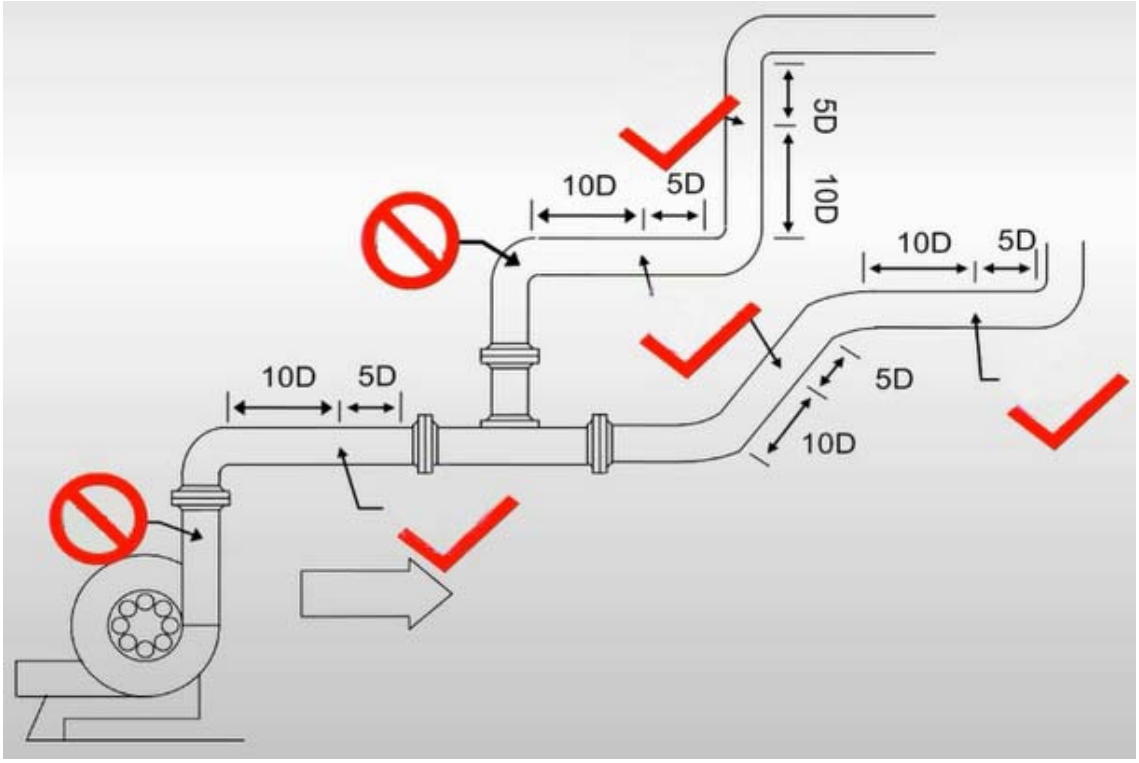
5. Requirement to the installation

5.1 The installation position on pipeline must be full of fluid, the position marked with red in the following diagram are pipeline section of full fluid. The pipeline should not have strong vibration.



5.2 The installation position on pipeline must be steady flow section, see the positions marked with “ ” in the following diagrams





The requirement of steady flow field as follow:

If the installation position is far away from pump's outlet and the half-open valve, make sure the upstream straight pipe length ≥ 10D, downstream straight pipe length ≥ 5D

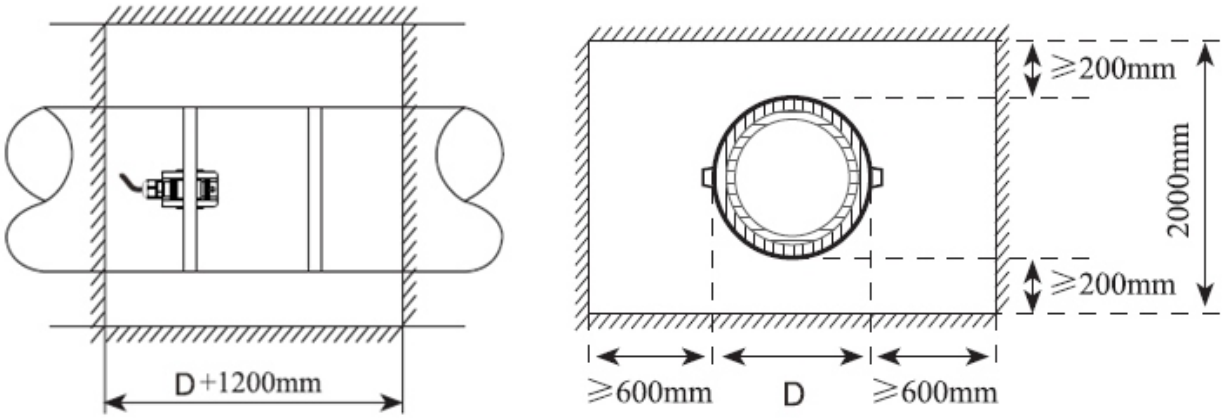
If the installation position is near the pump's outlet or near the half-open valve, make sure the upstream straight pipe length ≥ 30D, downstream straight pipe length ≥ 5D

5.3 End user should select the installation position which is not easy to produce scale formation, if the pipeline cannot avoid the scale formation, user can set the thickness of scale formation as the liner of pipeline.

5.4 At the same pipeline system, user should select the pipeline section of lower temperature as the installation position.

5.5 Ultrasonic flow converter should keep away from the strong electromagnetic interference source such as frequency converter, broadcasting station, base station, high-voltage power line. Do not share the power supply with the frequency converter, advise to use the isolated power supply. The shielding layer of flow converter, flow sensor should be ground connection.

For the flow meter which need to be buried under ground, need to build a instrument well, in order to make sure the instrument well has enough installation and maintaining space for the flow meter, the dimension of the instrument well should meet the requirement shown in the following diagram:



D is pipeline's diameter