1. Working principle of turbine flowmeter

The turbine flowmeter has a turbine which is installed in a fluid pipeline and supported by bearings at both ends.

When the fluid passes through the turbine, it impinges on the turbine blade and drives the turbine blade to rotate.

The turbine flowmeter is used to measure the flow indirectly through the angular velocity of the turbine blade. The method is that the angular velocity of the blade is proportional to the fluid velocity.

Its angular velocity is detected by the sensor coil mounted in the casing. When the magnetic field line generated by the permanent magnetic steel in the casing of the turbine blade is cut, the change of magnetic flux in the sensor coil will be changed.

The sensing coil feeds the detected magnetic flux periodic change signal to the amplifier of the measuring instrument to amplify and shape the signal.

The impulse signal which is proportional to the velocity of flow is generated and sent to the converter circuit. The impulse signal is converted into the instantaneous flow rate and the accumulative flow rate value and displayed for processing.

2. Main functions of the converter:

1. The converter is equipped with signal amplification and shaping circuit, which can direct both ends of the signal coil, and only two wires are needed to connect with the sensor;

2. Measuring accuracy of level 0.5;

3. Multiple selected output modes for 4-20mA, pulse, and 485 communication (users purchase corresponding models according to their needs);

4. Free choice of DC 24V and battery power supply.

The battery is powered by 19Ah lithium ion battery, which can last up to 4 years.

3. Environment

- 20 ~ + 55 ℃ ambient temperature

relative humidity is 5% ~ 95%

the atmospheric pressure of 86 ~ 106 kpa

4. Temperature of the measured fluid

ordinary - 20 ~ + 120 ℃

explosion-proof type - 20 ~ 70 ℃

5. Connection structure and size:

The threaded connection structure is shown in Figure 1, and the connection size is shown in the attached table

The flange connection structure is shown in Figure 2, and the connection size is shown in the attached table

Flange construction and dimensions as per JB79-59,JB81-59,JB82-59) standard.

FIG. 1 Threaded connection structure

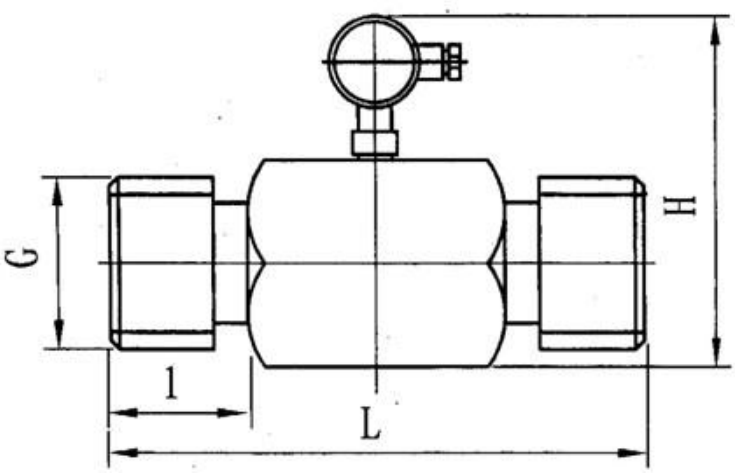
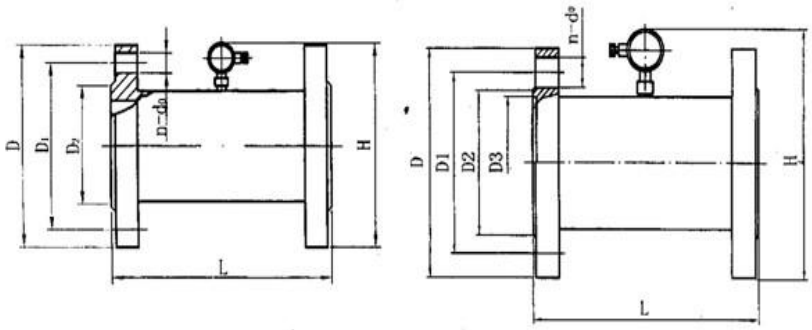
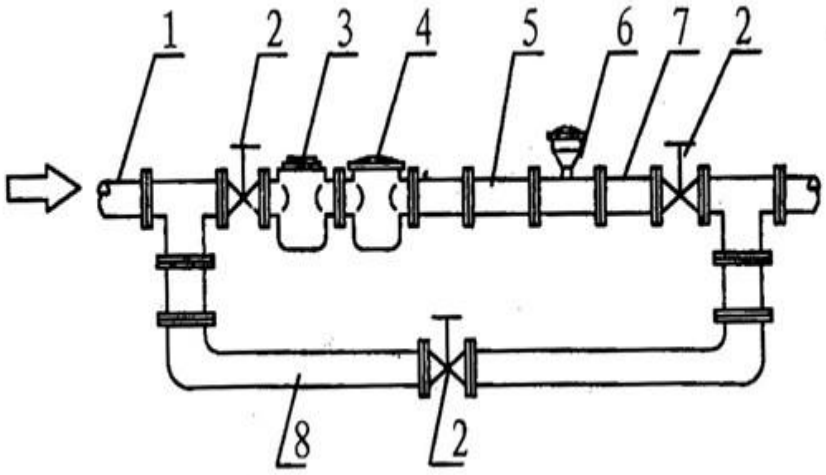


FIG. 2 Flange connection structure



6. Field installation instructions:

Normally the sensor should be installed horizontally and the normal pipeline configuration is as shown



Turbine flowmeter pipeline configuration diagram

Inlet 2. Valve 3. Filter 4. Gas eliminator 5. Rectifier 6.

Turbine flow sensor 7. Rear straight section 8. Bypass section

The functions of each part in the figure are described as follows:

disappear: used to eliminate the free gas in the fluid, avoid free gas occupies the volume of

the measurement error.

filters: the fluid in various impurities (such as particles and fibers.

The ferromagnetic material is filtered out and not allowed to enter the sensor to ensure that the parts inside the sensor (especially the shaft and bearing) are not damaged.

Mesh size depends on the fluid impurities, generally 20-60 mesh

rectifier: when the sensor before the straight pipe length of not less than 20 times the nominal diameter, can not install rectifier, in order to guarantee the precision and stability of the sensor, otherwise you must install rectifier, to eliminate the bias current, rotating flow, eddy current, etc.

The sensor shall be mounted horizontally and the flow direction of the fluid shall be consistent with the flow direction marker on the housing.

The pipe axis of the sensor shall be aligned with the corresponding pipe axis, and the gasket used to connect the seal shall not penetrate into the pipe cavity.

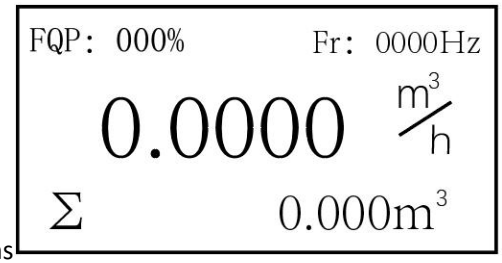
The upper and lower reaches shall have the same tolerances as the sensors respectively.

Otherwise, the rectifier shall be installed upstream.

The flow control valve shall be installed downstream of the sensor.

The entire piping system shall be well sealed.

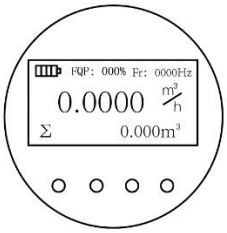
7. Display instructions



DC24V power supply interface

Battery supply interface

8. Keystroke operation



Button description:

1. Function key: This is a compound key, which needs to be used in conjunction with other keys.

Use 1, function key + OK key: enter the parameter setting function

Use 2, function key + "- key" : in the input setting value interface, you can move the cursor left to

enter the mark position
Use 3, function key + "+ key" : in the input setting value interface, you can move the cursor right to enter the mark position
2. "- button" :
Using 1, modify the number indicated by the cursor to subtract 1
Use 2 and move the cursor along with the function key (refer to function key and use 2)
3. "+ key" :Using 1, modify the number indicated by the cursor to add 1
Use 2 and move the cursor along with the function key (refer to function key and use 3)
4. Confirm key:
Use 1 to complete the input and save the data
Use 2 with function key (refer to function key and use 1)
Use 3. After input, in the parameter setting project interface, long press to return to the main interface
Using the shortcut function of 4, long press on the measurement interface, and a shortcut of one-key zero clearing will appear
9. Parameter setting
Main menu password option setting value description
Parameter setting 10000 language Chinese/English
1. Preset selection
2. Default Chinese
1. Input Settings, device address
2. Battery power does not have this option
3. Select current output product. This setting is invalid
4. Only select 485 communication products to take effect
5. Default address 001
Baud rate 2400, 4800, 9600, 19200
1. Preset selection, baud rate of equipment communication
2. Battery power does not have this option
3. Select current output product. This setting is invalid
4. Only select 485 communication products to take effect
5. The default of 2400
Flow unit m3/h, m3/m, m3/s,
L/h, L/m, L/s,
1. Preset selection
2. The default m3 / h
1. Input Settings
2. The range unit will change as the flow unit is modified
3. Default value is 100
Damping time 1~16
1. Input setting
2. The default value is 04
Small signal removal 0~100%
1. Input setting
2. Input greater than 100% is equivalent to 100%

3. The default 0

Instrument coefficient 1~9999999

1. Input setting

2. Modify the flow value

3. 3600 by default

Set density 1~59999

1. Input Settings

2. Modify the fluid density,

3. Default is 1000Kg/ m3

Output mode Pulse output/current output

1. Preset selection

2. Battery power does not have this option

3. Select the product with 485 communication function. If this setting function is set to current output, it is invalid and can only select pulse output

4. Default current output

Cumulative Settings 0~999999999.999

1. Input Settings

2. The default value is the current actual accumulative amount of the system

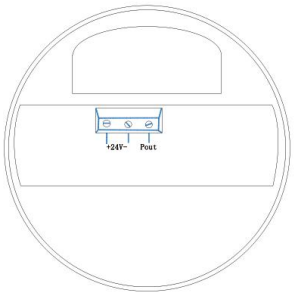
Current zero correction 0~5.9999

1. Input setting

2. The default is the factory revision value, and no modification is allowed under special circumstances

Current full correction 0~5.9999

2. The default is the factory revision value, and no modification is allowed under special circumstances



Schematic diagram of output wiring for 24V power supply 4~20mA

Note: "+24V-" is the power supply input, and is also the output of 4~20mA. The terminals corresponding to "+" are connected to the positive power supply, while the terminals corresponding to "-" are connected to the negative power supply.

Pout is pulse output, pulse voltage is 24V, pulse negative and power negative share a terminal.

(The "output mode" should be set as pulse in parameter setting, and the output value of 4~20mA is incorrect)

11. Frequently asked questions

The treatment method of serial number problem phenomenon

1. Confirm the connection of turbine sensor

2. If possible, the turbine sensor can be replaced to confirm whether it is a converter problem or a turbine sensor problem

3. The above two items are no problem, please contact the manufacturer after sales

1. Check whether the power connection (battery or 24V) is correct

2. Check whether the power supply (battery or 24V) is normal, whether the battery is sufficient, and whether the 24V power supply voltage is abnormal

3. The above two items are no problem, please contact the manufacturer after sales

12. Schedule:

nominal

size

DN (mm) sensor

Dimension (mm) Flange dimension (mm)

公称通径 DN(mm)	传感器尺寸（mm）	法兰尺寸（mm）						管螺纹尺寸	
	L	H	D	D_1	D_2	D_3	n-do	L1(mm)	G
4	225	145							1/2
6	225	145							1/2
10	345	170							1/2
15	75	190	95	65	45		4-14	23	1
20	85	210	105	75	55		4-14	23	1
25	100	230	115	85	65		4-14	30	11/4
32	120	250	140/135	100	78		4-18	30	11/4
40	140	260	150/145	110	85		4-18	35	2
50	150	270	165/160	125	100		4-18		
65	150	290	185/180	145	125		4-18		
80	200	300	200/195	160	135		8-18		
100	220	330	220/215	180	155		8-18		
125	250	380	250/245	210	185		8-18		
150	300	390	285/280	240	210		8-23		
200	360	455	340/335	295	265		12-23		
250	400	510	405	355	320		12-26/25		
300	420	565	460	410	375		12-26/25		
400	560	680	580	525	485		16-30		
500	600	790	715/705	650	608		20-34		

Pipe thread size