

DATASHEET

Flow

Swirl Flow Meter

Gas Metering

Model PWF-SF



Description

Intelligent precision vortex flowmeter is a new type instrument for gas flow measurement. It integrates the functions of flow, temperature and pressure detection, and can automatically compensate the temperature, pressure and compression factors. It is an ideal instrument for gas metering in petroleum, chemical industry, electric power, metallurgy and other industries.

Features

- No mechanical moving parts, not easy to corrode, stable and reliable, long life, long running without special maintenance;
- Using 16-bit single chip, high integration, small size, good performance, the whole machine function is strong;
- Set intelligent flowmeter flow sensor, microprocessor, pressure and temperature sensor, adopt built-in combination, make the structure more compact, can directly measure the fluid flow, pressure and temperature, and automatic tracking compensation and real-time compression factor correction;
- Use a Chinese character dot matrix display screen with many display digits, intuitive and convenient readings. Directly display the volume flow rate under working conditions and the volume flow rate under standard conditions, the total amount, as well as medium pressure, temperature and other parameters.
- Using EEPROM technology, convenient parameter Settings, which can be permanent, historical data saved for up to one year;
- Converter can output pulse frequency, 4~20mA analog signals, with RS485 interface, can be directly

with the computer networking, transmission distance of 1.2 km;

- Multi-physical parameter alarm output, users can choose one of them;
- Flow meter header can rotate 360°, easy to install and use;
- With our data collector, remotely transmit data through the Internet or telephone network;
- The sensor input pressure and temperature signal, strong interchangeability;
- Low power consumption, internal battery or external power supply available;
- Maintenance-free, cleaning-free.

Structure

The flowmeter consists of the following seven basic components (Figure 1):

1. Vortex generator

Made of aluminum alloy, spiral blades with a certain angle are fixed at the front of the contraction section of the shell to force the fluid to generate strong vortex flow.

2. Shell

It is equipped with flange and fluid passage with certain shape.

According to different working pressures, the shell material can be cast aluminum alloy or stainless steel.

3. Intelligent flowmeter totalizer

It consists of temperature and pressure detection analog channel, flow detection digital channel, micro-processing unit, liquid crystal drive circuit and other auxiliary circuits, and is equipped with an external signal interface.

4. Temperature sensor

The Pt100 platinum resistor is used as a temperature sensitive element. Within a certain temperature range, its resistance value corresponds to the temperature.

5. Pressure sensor

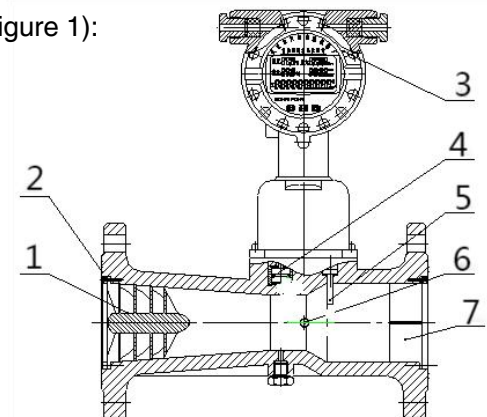
The piezoresistive diffusion silicon bridge circuit is taken as a sensitive element, and the bridge arm resistance of the piezoresistive diffusion silicon bridge circuit changes as expected under the action of external pressure, so the potential difference between the two output ends of the piezoresistive diffusion silicon bridge circuit is proportional to the external pressure under the action of a certain excitation current.

6. Piezoelectric crystal sensor

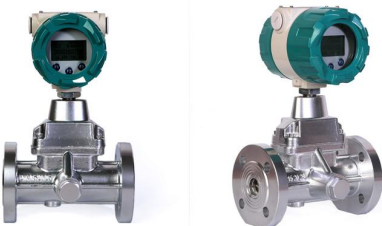
Installed near the throat of the shell expansion section, it can detect the frequency signal of vortex precession.

7. Racemization device

It is fixed at the outlet section of the shell and its function is to eliminate vortex flow so as to reduce the influence on the performance of downstream instruments.



Specifications

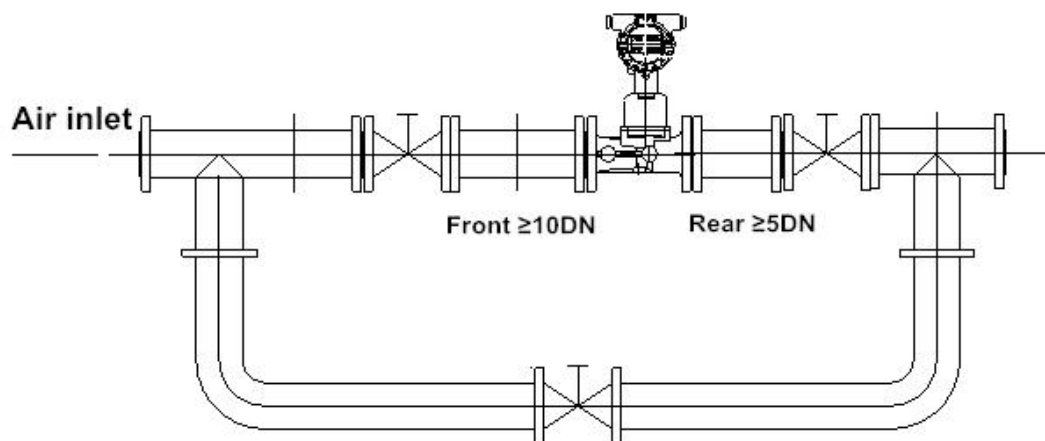
PWF-SF Precision Swirl Flow Meter	
Shell Material	Aluminum alloy or stainless steel
Accuracy	1.5%
Measuring Range	1.0-3600 m ³ /h
Diameter	DN15-DN200
Output	4-20mA / Pulse, RS485 and HART optional
Pressure Rating	1.6MPa, 2.5MPa
Power Supply	Internal 1pc 3.6V lithium(ER26500); or external 24VDC
Display	LCD digital display
Power Consumption	External power supply: <2W; Internal battery: Average 1mW, can be used for more than 2 years
Connection	Thread or Flange
Protection Level	IP65
Compensation	Integrated with temperature and pressure sensor, automatically compensation
Working Condition	Environmental temperature: -30℃~+65℃ Relative humidity: 5%~95% Medium temperature: -20℃~+80℃ Atmospheric pressure: 86KPa~106KPa

Parameter & Performance

Internal Nominal Diameter (mm)	Flow Range (m ³ /h)	Working Pressure (MPa)	Accuracy	Repeatability
15	1.0~10	1.6 2.5 4.0	1.0% 1.5%	Less than 1/3 of the absolute value of the fundamental error limit
20	1.5~15			
25	3.0~30			
32	6.0~60			
40	7.0~70			
50	12~150			
80	40~400			
100	80~900			
150	120~1800			
200	240~3600	1.6; 2.5; 4.0		

Installation

- When installing the flowmeter, it is strictly prohibited to directly conduct electric welding at its inlet and outlet flanges to avoid burning out the internal parts of the flowmeter.
- The newly installed or overhauled pipeline must be cleaned, and the flowmeter can be installed only after sundries in the pipeline are removed.
- The flowmeter shall be installed in a place convenient for maintenance, free from strong electromagnetic field interference, strong mechanical vibration and thermal radiation.
- Flowmeter should not be used in occasions with frequent flow interruption and strong pulsating flow or pressure pulsation.
- When installing the flowmeter outdoors, the upper part should be covered to prevent rainwater immersion and sun exposure from affecting the service life of the flowmeter.
- The flowmeter can be installed at any angle, and the flow direction of the fluid should be consistent with the flow direction marked on the flowmeter.
- During the pipeline construction, consideration should be given to installing expansion pipes or bellows to avoid serious stretching or breaking of flowmeter.
- The flowmeter shall be installed coaxially with the pipeline and prevent sealing piece and butter from entering the inner cavity of the pipeline.
- When an external power supply is used, the flowmeter must have reliable grounding, and it is not allowed to share the ground wire with the high-voltage power system. During installation or maintenance of the pipeline, it is not allowed to overlap the ground wire of the electric welding system with the flowmeter.
- In order not to affect the normal transportation of fluid and facilitate maintenance, and to ensure the straight pipe section with the front $\geq 10DN$ and the rear $\geq 5DN$, as below:



Part Selection Table

Selection Code Of Flow Meter				
PWF-SF			Description	
Meter Style	N		Without Temperature And press compensation	
	T		With Temp. and press compensation	
Power Supply	E		24VDC power	
	D		Dual power (24VDC and 3.6V lithium battery)	
Meter Diameter		-XXX		DN15.20.25.32.40.50.65.80.100.125.150.200
Material		AL		Aluminum alloy
		SS		Stainless steel
Single output			0	Pulse output
			1	4-20mA
			2	RS485
Nominal Pressure			-016	1.6MPa
			-025	2.5MPa
			-040	40Mpa