

Product overview

The FVS intelligent vortex street flowmeter is of good medium adaptive capacity, can be used to directly measure the volume flow under the working condition of steam, air, gas, water and liquid, and equipped with temperature and pressure sensor to measure the volume flow rate and mass flow rate under standard conditions. The parameters is capable of long-term stable working. The piezoelectric stress sensor can be used to work under the operating temperature scope of $-20^{\circ}\text{C}\sim+250^{\circ}\text{C}$. There is a simulated standard signal and a digital pulse signal output. It can be used with computer and other digital systems and is an advanced and ideal flow instrument. It's applicable to all fields (such as petroleum, chemical engineering, thermal power generation, lithium battery new energy industry, metallurgy, food, environmental protection and hydraulic engineering).

Operating principle:

The FVS vortex street flowmeter is constituted by vortex generator, detection probe and corresponding electronic circuit designed in the flow field. When the fluid flows through the vortex generator, two alternating rows of vortices are formed on two ends of it, and such vortex is called as Karman Vortex Street. Strouhal proposed that the frequency of Karman Vortex Street was proportional to the flow rate of the fluid based on the theory of Karman Vortex Street and provided the relationship between frequency and velocity:

$$f = St \times V/d, \text{ wherein:}$$

f : frequency of occurrence of vortex street (Hz)

V : mean flow rate on both sides of vortex generator (m/s)

St : Strouhal 's coefficient (constant)

These alternating vortices form a series of alternating negative pressures which act on the detection probe to produces a series of alternating electrical signals and output the pulse frequency signal proportional to vortex synchronization (or standard signal) after conversion, shaping and amplification processing by the pre-amplifier.



Product features

- It can be used to measure the volume flow rate and mass flow rate of steam, gas and liquid.
- It can be used to realize the continuous flow disassembly of sensor and the amplifier is separated from the sensor (separation distance: 15m).
- The disturbance elimination circuit and vibration sensing head are used to make the instrument have a certain resistance to environmental vibration.
- Small pressure loss, wide measuring range and scope reaching to 10-40 times.
- No mechanical moving parts, long-term stability, simple structure and convenient installation and maintenance.
- Medium temperature measured: $+350^{\circ}\text{C}$ ($+450^{\circ}\text{C}$).

Technical parameters

- Measuring medium: Liquid, general gas, natural gas and steam (saturated steam and superheated steam)
- Possible measurement scope: Reynolds number: $5 \times 10^3 \sim 7 \times 10^6$
- Normal measurement scope: Reynolds number: $2 \times 10^4 \sim 7 \times 10^6$
- Flow velocity measurement scope: Liquid: $0.5 \sim 7\text{m/s}$, gas: $4 \sim 35\text{mm/s}$, steam: $7 \sim 70\text{m/s}$
- Temperature of measured fluid: $-40^{\circ}\text{C} \sim +300^{\circ}\text{C}$
- Temperature of measured fluid: 1.6, 4 and 25MPa
- Accuracy: Level 1, 1.5 and 0.5 (reaching to Level 0.5 by nonlinear trimming);
- Repeatability: 0.2% of indicated value;
- Surface material: IC18Ni9Ti;



- Pressure loss: $\Delta = 1.2 \times r \times V^2 \times 10^{-6}$ Wherein: ΔP -pressure loss r -density of measured fluid (Kg/m^3) v -mean velocity in the tube (m/s) ambient temperature: $-20^\circ\text{C} \sim +55^\circ\text{C}$ (description about ordering goods as per special requirements);
- Ambient humidity: $\leq 90\% \text{RH}$;
- External power supply: $3.6 \sim 224 \text{VDC}$;
- Working power supply: $80/\text{A}$;
- Working frequency: $0.1 \sim 3000 \text{Hz}$;
- Signal output: Pulse output (external power supply) Current output: $4 \sim 20 \text{mA DC}$ (two-wire system external 24VDC power supply) Either pulse output or current output can be chosen
- Atmospheric pressure: $86 \sim 106 \text{KPa}$;
- Internal power supply: $3 \sim 4.5 \text{VDC}$;
- Operating voltage: $2.7 \sim 3.6 \text{V}$;
- Signal remote transmission distance: 100mm ;

Product model selection

FVS		Intelligent vortex street flowmeter					
Diameter/flow scope (m³/h)	DN25	1~10(liquid)		25~60 (gas)		Check the specification for steam flow and recommend the use of plug-in vortex street flowmeter in case of above DN300	
	DN32	1.5~18(liquid)		15~150 (gas)			
	DN40	2.2~27(liquid)		22.6~150 (gas)			
	DN50	4~55(liquid)		35~350 (gas) +Q.			
	DN80	9~135(liquid)		90~900 (gas)			
	DN100	14~200(liquid)		140~1400 (gas)			
	DN150	32~480(liquid)		300~3000 (gas)			
	DN200	56~800(liquid)		550~5500 (gas)			
Function 1		N	No temperature and pressure compensation				
		Y	With temperature and pressure compensation				
Output type			F1	4-20mA output (two-wire system)			
			F2	4-20mA output (three-wire system)			
			F3	RS485 communication interface			
Measured medium			J1	Liquid			
			J2	Gas			
			J3	Steam			
Connection type				L1	Flange clamping type		
				L2	Flange connection type		
Function 2	(communication interface)				E1	Level 1.0	
					E2	Level 1.5	
					T1	Normal temperature	
					T2	High temperature	
					T3	Steam	
					P1	1.6MPa	
					P2	2.5MPa	
					P3	4.0MPa	
					D1	Internal 3.6V power supply	
					D2	DC24V power supply	
					B1	Stainless steel	
					B2	Carbon steel	
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