

MTF Target Flow Meter

Profile

MTF is a new type of intelligent target flowmeter developed based on the traditional target flowmeter measurement principle, making full use of its best features, combining new sensor technology and modern digital technology. It has not only the characteristics of traditional target type, orifice plate, vortex, and other flowmeters, that is, no moving parts, but also measurement accuracy comparable to positive displacement flowmeters, coupled with its unique anti-interference and anti-impurity performance, light and reliable, it's widely used in various fields such as petroleum, chemical industry, energy, food, environmental protection, and water conservancy. Judging from the effect after its use, the intelligent target flowmeter has extremely broad applicability.



Features

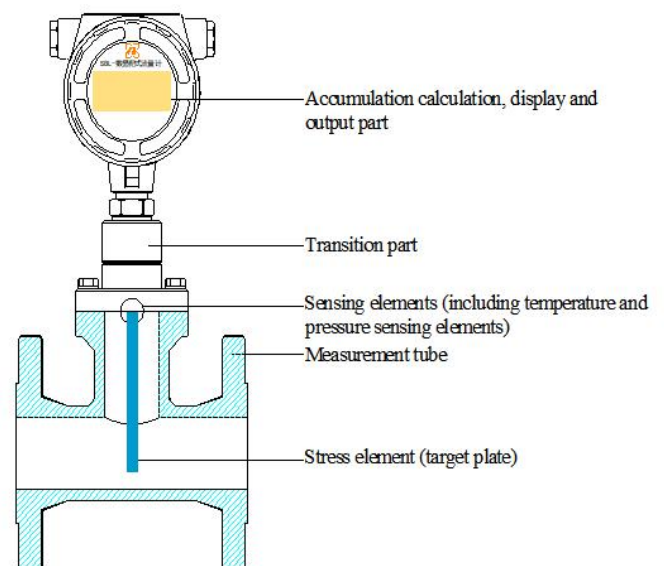
- No moving parts, safe and reliable to use.
- The dry calibration method can be used, namely the method of hanging weight.
- Measurable medium include liquid, gas, steam, viscous medium & various fluid mediums under various normal temperature, high temperature & low temperature conditions.
- High sensitivity, capable of measuring ultra-small flow, which can measure low flow velocity of 0.8m/s.
- High precision, total measurement reaches 0.2%.
- Wide measuring range, max measuring range reach 1:30.
- Good repeatability, generally 0.05~0.08%, fast measurement.
- Small pressure loss, only about $1/2 \Delta P$ of the standard orifice plate.
- Strong anti-interference and anti-impurity ability.
- The measuring flow range can be changed by replacing the force component according to actual needs.
- Can read the indicated value directly online, and can transmit and send letters.
- Simple and convenient to install and maintain.

Parameters

Process fluid	Liquid; gas; steam				
Medium temperature	-196℃～+450℃ (Determine the temperature range when ordering)				
Nominal diameter (mm)	Pipe type	Clamp on type		Insertion type	
	15～300	15~600mm		100~2000mm	
Nominal pressure	0.6~42MPa	0.6~42MPa		0.6~42MPa	
Repeatability	0.05%～0.08%				
Accuracy	±0.2%	±0.5%	±1.0%	±1.5%	±2.5%
Range ratio	1:3	1:5	1:20	1:20	1:20(steam)
Power supply	lithium battery (3.6V); external power supply 24VDC				
Output signal	4 ~20mA; pulse;1-10V; RS485/RS232; HART;Site value display;				
Measuring tube material	304SS;316L; Carbon steel or by customized				
IP rating	IP65,IP67,IP68				
Explosion-proof grade	ExibIICT ₄ ;ExdIICT ₄				

Structure

The intelligent target flow meter is mainly composed of measuring tube (shell), force element, sensing element (force sensor, pressure sensor, temperature sensor), transition part (increased or decreased according to temperature and pressure), integrated display and output part, Its structure is as the figure shown:



Principle

When the medium is flowing in the measuring tube, due to its own kinetic energy and the pressure difference generated by the choke, force of a pair of force elements are generated. The force is proportional to the square of the medium flow rate. The expression is as follows:

$$F=C_D A \rho \cdot U^2 / 2$$

In the formula:

F—The force received by the force element

C_D —object resistance coefficient

ρ —medium density under working conditions

U—The average flow rate of the medium in the measuring tube

A—Axial projected area of the force element on the measuring tube