

Model LTG Target Flowmeter



Target flowmeter is mainly used to measure the flow of fluid with high viscosity and low Reynolds number. It has gone through two stages of development: pneumatic meter and electric meter. LTG Target flowmeter is based on the principle of original strain gauge target flowmeter. It adopts the latest capacitive force sensor as measurement and sensitive transfer element, and is developed by using modern digital intelligent processing technology. A new type of flow meter is developed. It has the characteristics of orifice plate, vortex and other flowmeters without movable parts. It also has high sensitivity, accuracy comparable to volumetric flowmeter and wide measuring range.

Capacitive target flowmeter is mainly composed of measuring tube (housing), new capacitive force sensor (including resistor), integrative display and output. According to different media and working conditions, appropriate capacitive force sensors must be selected. Therefore, accurate measurement objects and parameters provided by users and appropriate capacitive force sensors selected by manufacturers are the key to accurate measurement of products.

Product Principle

When the medium flows in the measuring tube, because of its kinetic energy and the pressure difference between the target plate and the target plate, the force exerted on the target plate will produce a small displacement. The magnitude of the force is proportional to the square of the velocity of the medium. The mathematical formula is as follows:

$$F = C_d \cdot A \cdot \rho \cdot V^2 / 2$$

F: the force acting on the target plate

C_d: Fluid Resistance Coefficient

A: Axial Projection Area of Target to Measuring Tube

P: Medium Density under Working Conditions

V: Characteristic velocity of medium in measuring tube

The force acting on the target plate is transmitted by the target rod, which makes the elastomer of the sensor change slightly. Through circuit conversion, the corresponding electrical signals are output.

Capacitive force sensor is the key to realize high precision and stability of LTG target flowmeter. It completely changes the limitations of strain target flowmeter, such as large temperature drift, poor resistance to overload (impact) and static sealing point. It not only gives full play to the original technical advantages of target flowmeter, but also has the same accuracy as volume flowmeter. In addition to its unique anti-interference and anti-impurity performance, it can replace the flow measurement problem of conventional flow measurement, especially in the case

of difficult flow measurement such as small flow, high viscosity, easy coagulation and blockage, high and low temperature, strong corrosion, strong vibration and so on. At present, it has been widely used in flow measurement in metallurgy, petroleum, chemical industry, energy, food, environmental protection and other fields.

Features

- Wide range of pipe diameter: 10~2000 to larger;
- Applicable temperature range is wide: - 196 C ~ 500 C;
- Suitable for high/low pressure conditions: 0~42MPa;
- Applicable to all kinds of media: gas, liquid (including high viscosity liquid, slurry), steam;
- Suitable for low velocity media, and the lowest velocity can be measured is 0.08m/s.
- The instrument has strong structure, no movable parts, plug-in structure and easy disassembly.
- The sensor is not in contact with the measured medium, there is no wear and tear of parts, and it is safe and reliable to use.
- The pressure loss is only about 1/2 Delta P of the standard orifice plate.
- Anti-interference, anti-impurity ability;
- Easy to install and maintain.

Technical Parameters

Measured medium	Liquid; Gas; Steam			
Caliber	Flange type 15~500mm	Clamping type 15~500mm	Inserted type 65~3000mm	
PRESS	0.6~42MPa	0.6~42MPa	0.6~42MPa	
TEMP	-200°C ~ +500°C or higher temperature			
Accuracy	±0.2%	±0.5%	±1.0%	±1.5%
Range ratio	1: 3 (Liquid)	1: 5 (Liquid, Gas)	1: 10 (Liquid, Gas)	1: 10 (Steam)
Compensation	Temperature compensation; pressure compensation			
Repeatability	0.05%~0.08%			
Power supply	self-contained lithium battery (3.6V); external power supply 24VDC			
Output	Local display; 4-20mA two-wire; Pulse 0-5V; RS485/RS232; GPRS wireless remote transmission			
Tube material	Carbon steel; Stainless steel; Can also be provided by negotiation according to user's requirements.			
Explosion-proof mark	ExiaIICT ₄ , ExdIICT ₄			
Protection class	IP65; IP67			
Flange specification	Flowmeter connecting flange specifications implement GB/T series standards, can also be processed according to user requirements.			

Typical Applications

Gases: gas, air, hydrogen, natural gas, nitrogen, liquefied petroleum gas, hydrogen peroxide, flue gas, methane, butane, chlorine, etc.

Liquids: heavy oil, paraffin, asphalt, sulfuric acid, edible oil, residue, acetone, diesel, mine water,

detergents, soy sauce, gasoline, silicone oil, syrup, solvents, perfume, sea water, aviation kerosene, soap ketone water, glucose, vegetable oleic acid, salt water, paste, ink, cold reagents, glycol, mineral oil, liquid sugar, hydrochloric acid, automotive coatings, resin, butter and vegetables. Oil, liquid oxygen, shampoo, toothpaste, gelatin, fuel oil, milk, bleach, regulator, soda, additive, cleaning agent, basic, ammonia, marine oil, chemical reagent, kerosene, glycerin, dyestuff, water, nitric acid, high boiling point organic solution, lard, additive, alcohol, oil, ethylene, polypropylene, methyl alcohol, etc.

Instrument Output and Connection

Instrument Output:

- A. Current output: 4-20 mA; Power supply: 10-32 VDC, two-wire;
- B. Pulse output: 0-1000Hz; Internal resistance 1000 Ohm; Power supply: 10-32VDC; 10mA (with backlight 20mA);
- C. RS232/RS485 interface; power supply: 10-32VDC; 10mA (with backlight 20mA);
- D. HART protocol;

Instrument wiring:

- A. electrical Connection: M20 *1.5
- B. 4-20mA current output is two-wire system
- C. Pulse output is three-wire system (Fig. 2)

Power supply:

- A. LCD display with no output, built-in 3.6 VDC lithium battery;
- B. LCD display with output and external power supply 24VDC

Ordering Codes

LTG -	0000 0 0 0 0 0 0 0 0											
	Code	Caliber										
	0010	DN10										
	0100	DN100										
											
	5000	DN5000										
	Code	Connection										
	F	Flanged Pipeline Type	C	Inserted type	D	Clamping type	U	On-line disassembly	L	Tapered tube threaded type	E	Others
	Code	Medium										
	L	liquid	G	Gas	S	Steam						
	Code	PRESS										
	A	0.6 Mpa	E	2.5 Mpa	I	10 Mpa	M	20Mpa				
	B	1.0 Mpa	F	4.0 Mpa	J	11 Mpa	N	25 Mpa				
	C	1.6 Mpa	G	5.0 Mpa	K	15 Mpa	O	26 Mpa				
	D	2.0 Mpa	H	6.3 Mpa	L	16 Mpa	P	42 Mpa				
	Code	Medium TEMP										

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	C	-20 ~ 80°C (Normal TEMP)		
	Z	80~ 200°C (Mid TEMP)		
	G	200~450°C (High TEMP)		
	D	-200~-20°C (low TEMP)		
	Code	Output		
	P	Pulse	H	HART protocol
	I	4~20mA	K	Switch
	R	Communication output		
	Code	Explosion-proof marking		
	A	CT4	D	BT4
	Code	Housing material		
	C	Carbon steel		
	S	304 Stainless steel		
	T	316L		
	Code	Sensor Material		
	H	Hastelloy		
	T	titanium		
	S	304 Stainless steel		
	E	Specific materials		

Note: Flowmeter flange specifications are implemented according to relevant technical parameters, technical conditions and types specified in GB/T series standards. It can also be processed according to customer's requirements.