

HFM400 Metal Tube Float Flow Meter



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Overview

Metal tube float flow meter (metal tube rotor flow meter) is a kind of variable area flow meter commonly used in industrial automation process control. It has the characteristics of small volume, large detection range, easy to use, it can be used to measure the flow rate of liquid, gas and steam, especially suitable for low flow rate and small flow rate measurement.

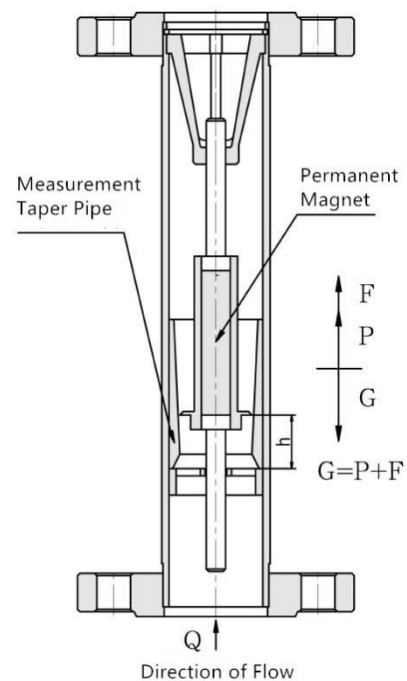
Over the years, the metal tube float flow meter with its excellent performance and reliability, as well as better performance price, in petrochemical, steel, electric power, gold, light industry, food, pharmaceutical, water treatment and other industries have been widely used.

Measurement Principle

HFM400 series of metal tube float flow meter is mainly composed of two parts: sensor and indicator. The sensor is mainly composed of connecting flange, measuring cone, float and upper and lower guide. The indicator is mainly composed of housing, magnetic drive system, dial and electric remote transmission system.

In a vertical tapered measuring tube, there is a measuring component that can move up and down -- the float (FIG. 1). When the fluid moves upward through the tapered tube from bottom to top, the float is moved upward along the tapered tube by the force of the fluid. When the flow rate of the fluid increases, the displacement of the float increases. On the contrary the displacement of the float decreases when the flow rate of the float decreases. In other words, the fluid flow determines the position of the float in the measuring tube, thus determining the size of the annular area between the float and the conical tube. When the flow rate of the fluid is maintained at a constant flow rate Q , the float is also in a state of dynamic equilibrium, staying at a position H in the conical tube. At this time, the annular area between the float and the conical tube remains constant. The float is acted upon by three forces: gravity G of the float, buoyancy F of the float, and fluid force P of the float. These forces are in equilibrium. According to Bernoulli force equation, force balance principle and fluid continuity law of fluid dynamics, the instantaneous fluid flow through the annular area can be calculated. Therefore, the metal tube float flow meter adopts the principle of variable area to measure the flow.

Inside the float, a high performance permanent magnet is embedded to form a uniform and stable magnetic field around the float when the float is in a balanced



position. A magnetic sensor is mounted on the outside of the conical tube so that the linear displacement of the float in the measuring tube can be transmitted in a non-contact form to the indicator, which, after detection and processing, is finally displayed on the indicator dial or output the corresponding standard 4 ~ 20mA current signal.

Feature

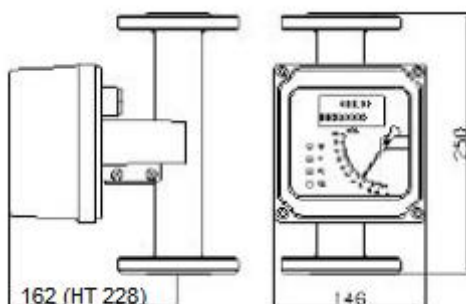
- ◆ It is suitable for measuring the flow rate of medium with small diameter and low velocity
- ◆ Reliable operation, small amount of maintenance, long life
- ◆ Requirements for straight section are not high
- ◆ Wider range ratio of 10:1
- ◆ Double-line LIQUID crystal display, field instantaneous/cumulative flow display
- ◆ There is a keyboard on the indicator for easy operation and setting
- ◆ All-metal structure, suitable for high temperature, high pressure and strong corrosive medium
- ◆ Non-contact magnetic coupling transmission
- ◆ Can be used in inflammable and explosive dangerous occasions
- ◆ Optional DC power supply or battery power supply mode
- ◆ With data recovery, data backup and power down protection functions
- ◆ Multi-parameter calibration function

Technical Parameter

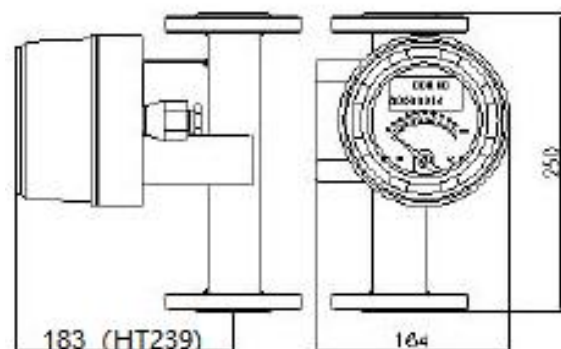
Aperture Diameter	DN15, DN25, DN50, DN80, DN100, DN150 (other diameters, need consult us and customized)
Flow Range	Liquid: 1.0 ~ 150000L /h gas: 0.05 ~ 3000m ³ /h
Ratio Range	10 : 1, 20 : 1 (Special)
Viscosity of medium	DN15: < 5mPa. S / DN25: < 250mPa. S DN50 ~ DN150: < 300mPa.S

Flange	GB/T9119-2000 standard carbon steel (stainless steel optional), other standards can be customized
Rated Pressure Grade	DN15, DN25, DN50:4.0MPa (Max 20MPa) DN80, DN100, DN150:1.6mpa (Max:DN80:10MPa;DN100:6.4 MPa;6:4.0 MPa)
Tube and Float Material	Default Stainless steel 304, SS316L, Hastelloy (HB and HC), Titanium can be customized, PTFE lining can customized
Ingress Protection	IP65 for Shell
Accuracy Grade	1.5 grade, 1.0 grade (Special customized)
Medium Temperature	Standard -30°C ~ +120°C, high temperature: 120°C ~ 350°C
Ambient temperature	-40°C ~ 120°C Remote: -30°C ~ 60°C
Storage condition	-40°C ~ 85°C Humidity: ≤85%
Supply Voltage	24VDC (12 ~ 36VDC)
Output	4 ~ 20mADC (two wire), HART protocol can be attached; Alarm dry contact signal

Dimension(unit:mm)



Standard Type Indicator



Standard Round Indicator

Ordering Guide

Item NO.	Type														
HFM400	Metal tube float Flow Meter	Code		Installation											
		A	Vertical installation												
		B	Horizontal installation												
		W	Sanitary type												
		Code		Float material											
		S4	SS304												
		S6	SS316L												
		PE	PTFE lining												
		HC	Hastelloy C												
		TI	Titanium alloy												
		Code		Measured Medium											
		W	water												
		A	Air/Gas												
		Code		Medium Temperature											
		A	max 120°C												
		H	120-350°C												
		Code		Output Signal											
		M1	Mechanical pointer												
		M2	LCD display												
		B1	4-20mA												
		B8	HART												
		Code		Connection Type											
		F	GB flange installation												
		K	Tri-Clamp												
Code		Pipe Diameter													
15	DN15														
25	DN25														
50	DN50														
80	DN80														
100	DN100														
125	DN125														
150	DN150														
Code		Power Supply													
V1	24VDC														
V2	220VAC														
Code		Additional Functions													
Exia	Exia II CT6GA														
Exd	Exd II CT6Gb														
B9	Relay output														
		Other requirements													
HFM400	A	S4	W	A	M1B1	F	V1								

Note:

1. Pls follow the ordering guide to select correct model
2. For special requirement such as high pressure and high temperature, pls advise when ordering, our technician will check if can meet requirement.