MTF VARIABLE AREA FLOW METER（ROTAMETER）

Summary

MTF Variable Area Flow Meter is an intelligent instrument developed by our company. It converts the fluid flow signal into corresponding analog voltage signal, outputs 4 ~ 20mA two-wire linear current signal and loads HART protocol for communication. With the features of high precision, low drift, and strong anti-interference ability, It can realize the remote configuration, monitoring, maintenance and calibration of the instrument and the flow measurement, supervision and management of the production process.
Patent Certificate No.: ZL02 3 53133.9

MTF-A Type Variable Area Flow Meter

MTF-B/MTF-C Type Variable Area Flow Meter

Operating Principle

The measured medium flows in from the lower end of the measuring tube, and with the action of the fluid, a differential pressure is generated between the upper and lower ends of the float, and this differential pressure is the lifting force of the float. The float will remain in a certain position when the lifting force applied to the float is balanced with the gravity of the float. The measured flow rate corresponds to the position of the float in the measuring tube, as shown in Figure 1. through the float's built-in magnet coupled with the detection of the magnetic steel on the axis of the indicator, the flow rate is displayed directly on the dial, or through the circuit conversion, the Hall sensor transforms the magnetic signal into electrical signal, and then processed by the controller, the flow rate is displayed on the LCD screen, 4-20mA current signal is output, loading a digital signal compliant with the HART protocol communication.

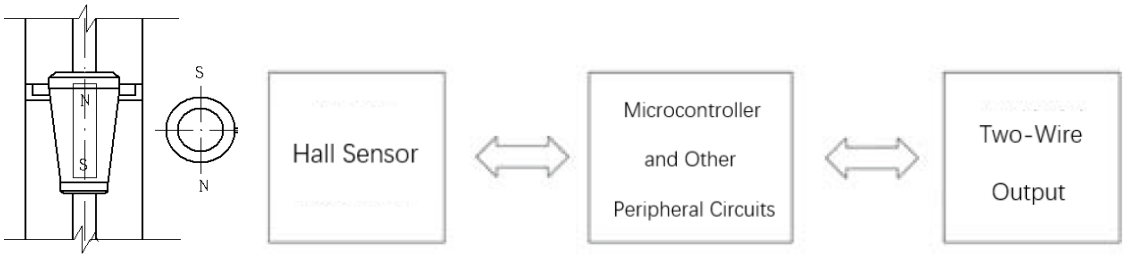

Figure 1 Mechanical Transmission, Electrical Schematic

Flow meter is composed of measuring meter and converter. It can be divided into vertical installation and horizontal installation according to the mounting type. Please see the details of Figure 2 and 3.

Technical Parameters

1. Main parameters

Power Supply: 12V ~ 30VDC
Output signal: Two wire, 4 ~ 20mADC , HART protocol communication.
Flange standard: HG/T20592-2009; HG/T20615-2009 (or on request)
Power entrance: M20×1.5(Internal Thread) or on request.
Input impedance: > 100MΩ
Standard load resistance: 250Ω
Nominal pressure: DN15 ~ DN50: PN≤10.0MPa;DN80 ~ DN100: PN≤6.3MPa (or on request)
Accuracy: 1.0% FS, 1.5% FS, 2.0% FS
Range ratio: 10:1
Medium temperature: -40℃≤T≤300℃
Damping period: (0 ~ 32 seconds)
Ambient temperature: -40℃≤T≤80℃ (When ≤ -20℃, LCD cannot display)
Explosion proof type: Intrinsically safe explosion type Exia II CT4 Ga, Isolation explosion type Exd II CT4 Gb
IP Rating: IP66
Measuring Range
Water: 2.5 L/h ~ 100000L/h(20℃)
Air: 0.07 ~ 1800m3/h(0.1013MPa, 20℃)
Applicable Medium viscosity
DN15, DN20: η < 5mPa.s (FZ15.1~FZ15.5)
η < 30mPa.s (FZ15.6, FZ15.15, FZ20.1~FZ20.4)
DN25, DN40: η < 250mPa.s
DN50, DN80, DN100: η < 300mPa.s

2. Classification

Classification by mounting type: vertical installation and horizontal installation
Classification by applicable medium:
Basic type: apply to liquid measurement
Damping type: apply to gas and vapor measurement
Anti-corrosion type: lining with PTFE and apply to corrosive medium measurement
Jacket type: apply to the medium needs to keep warm or cold.

Notice: There is no horizontal installation for anti-corrosion type or jacket type

Model Selection Table

1. Model selection table

Model	Code									Contents	
MTF -	A									Local indicator and transmitter (dual display) variable area flow transmitter	
	B									Transmitter (digital display) variable area flow transmitter	
	C									Local indicator (pointer display) variable area flow transmitter	
		3								PN16(1.6MPa)	
		4								PN20(Class150)	
		5								PN25(2.5Mpa)	
		6								PN40(4.0MPa)	
		7								PN50(Class300)	
		8								PN63(6.3Mpa)	
		9								PN100(10.0Mpa)	
		10								PN110(Class600)	
		.....								Other nominal pressures shall follow the actual code of sage X3 system	
			Z							Damping type	
			W							Non damping type	
				2	11					DN15	1/2"
				3	12					DN20	3/4"
				4	13					DN25	1"
				6	15					DN40	1-1/2"
				7	16					DN50	2"
				9	18					DN80	3"
				10	19					DN100	4"
						/					
							P			Wetted Material: lining with PTFE	
							2			Wetted Material: 304	
							3			Wetted Material: 316	
							4			Wetted Material: 316L	
							.....			Other material shall follow the actual code of sage X3 system	
								0		NA	
								i		Intrinsically safe	
								d		Explosion isolating	
									D	Medium Temperature: 0℃ < T≤200℃	
									G	Medium Temperature: -40℃≤T≤0℃ 200℃ < T≤300℃	
									S	Horizontal Installation	
									C	Vertical Installation	
MTF -	☐	☐	☐	☐	/	☐	☐	☐	☐		

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Example

MTF-B3W4/2dDC is Variable Area Flow Meter: Transmitter (digital display); Flange rate is PN1.6; Non damping type; Size DN25; Wetted material is 304; Isolation explosion type; Working temperature is 0℃ < t ≤200℃; Vertical installation.

2. Model selection flow table

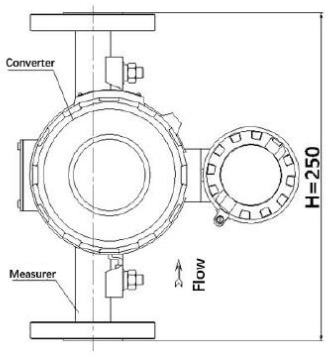
Nominal Diameter	Connectable Flange	Float Number	Flow value (Water L/h; Air m^3/h)			Pressure Loss (kPa)		
			Water Calibration		Air Calibration	Water Calibration		Air Calibration
			Float material			Float material		
			304	PTFE	304	304	PTFE	304
DN15	⩾DN15	FZ15.1	25	-	0.7	6.5	-	7.1
		FZ15.2	32	25	0.84	6.5	5.5	7.1
		FZ15.3	40	40	1.0	6.5	5.5	7.2
		FZ15.4	50	60	1.4	6.5	5.6	7.2
		FZ15.5	60	100	1.8	6.6	5.6	7.3
		FZ15.6	80	160	2.3	6.6	5.8	7.4
		FZ15.7	100	250	2.8	6.6	6.1	7.5
		FZ15.8	130	400	3.4	6.7	7.3	7.8
		FZ15.9	160	-	4.0	6.8	-	8.0
		FZ15.10	200	-	5.3	7.0	-	8.9
		FZ15.11	250	-	7.0	7.2	-	10.0
		FZ15.12	320	-	8.4	7.9	-	10.4
		FZ15.13	400	-	10.0	8.6	-	10.8
		FZ15.14	500	-	13.0	9.9	-	12.4
		FZ15.15	600	-	16.0	11.1	-	14.0
DN20	⩾DN20	FZ20.1	750	600	20	6.9	5.9	7.3
		FZ20.2	1000	1000	24	7.1	6.2	7.5
		FZ20.3	1300	-	29	7.5	-	7.9
		FZ20.4	1600	-	34	7.8	-	8.2
DN25	⩾DN25	FZ25.1	1000	600	30	7.0	5.5	7.7
		FZ25.2	1300	1000	37.5	7.5	5.6	8.3
		FZ25.3	1600	1600	45	8.0	5.6	8.8
		FZ25.4	1800	2500	50.6	8.6	6.4	9.5
		FZ25.5	2100	-	59	9.5	-	10.5
		FZ25.6	2300	-	64.6	10.1	-	11.2
		FZ25.7	2500	-	70	10.8	-	12.0
		FZ25.8	2900	-	80.7	13.2	-	13.2

		FZ25.9	3200	-	88.7	14.2	-	14.1
		FZ25.10	3600	-	99.4	15.6	-	15.3
		FZ25.11	4000	-	110	16	-	16.5
		FZ25.12	4400	-	121	17.4	-	17.8
		FZ25.13	4800	-	132	18.8	-	19.0
DN40	⩾DN40	FZ40.1	3000	1850	97	7.2	6.2	7.8
		FZ40.2	3750	2750	117	7.4	6.5	8.2
		FZ40.3	4500	5000	130	7.5	7.1	8.5
		FZ40.4	5500	6500	170	7.9	8.5	9.0
		FZ40.5	6500	-	210	8.3	-	9.4
		FZ40.6	7500	-	265	9.1	-	9.9
		FZ40.7	8500	-	320	9.8	-	10.3
		FZ40.8	10000	-	380	10.0	-	10.7
DN50	⩾DN50	FZ50.1	6000	4000	180	8.1	6.8	8.6
		FZ50.2	7000	6000	210	8.8	8.8	9.1
		FZ50.3	8000	10000	240	9.5	13.7	9.6
		FZ50.4	10000	16000	300	11.0	18.5	10.4
		FZ50.5	13000	-	450	14.0	-	12.9
		FZ50.6	16000	-	600	17.0	-	15.5
		FZ50.7	20000	-	780	19.7	-	16.4
		FZ50.8	25000	-	1000	20.0	-	18.6
DN80	⩾DN80	FZ80.1	25000	16000	1000	8.1	6.3	8.0
		FZ80.2	30000	25000	1070	8.6	7.2	10.0
		FZ80.3	35000	-	1140	9.1	-	12.0
		FZ80.4	40000	-	1200	9.5	-	14.0
DN100	⩾DN100	FZ100.1	60000	40000	1800	10.0	7.9	25.0
		FZ100.2	100000	-	-	15.0	-	-

Outline Drawing and Installation Size

1. Outline drawing and installation size of flow meter

The dimensions in the figures (see Figures 2 and 3) are the installation dimensions of standard instruments (when nominal pressure ⩽ Class600). When the nominal pressure is >Class600, the mounting size of the instrument should be determined according to the specific design.



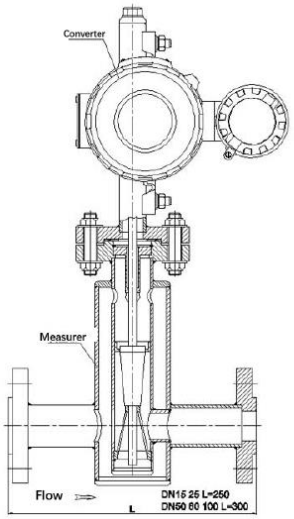


Figure 2 Outline Drawing for Vertical Installation Figure 3 Outline Drawing for Horizontal Installation

2. Filter outline drawing and installation size

If the medium contains solid particles, a corresponding filter should be installed before the upstream straight pipe section of the instrument to filter out particle impurities. If the medium contains ferromagnetic substances, the magnetic filter produced by our company should be equipped at the same time when purchasing the machine to prevent affecting the accuracy of the instrument and to extend the instrument's service life. The magnetic filter (see Figure 4), the wetted material can be304, 316L or other materials. The size in the figure is the installation size of the standard magnetic filter (when the nominal pressure ≤ Class600). When the nominal pressure > Class600, the installation size of the magnetic filter should be determined according to the specific design.

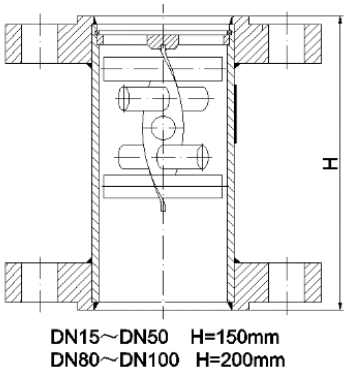


Figure 4 Outline Drawing for Magnetic Filter

Safety Barrier Recommended Use Table

Safety Barrier Recommended Use Table	
Shanghai Ben An Instrument System Co., Ltd	LS4041-Ex
German P+F Company	KFD2-STC3-Ex1

Shanghai Institute of automation and instrument	GS8041-Ex GS8045-Ex
Dandong Top Electronics Instrument (Group) Co., Ltd	TP5041-Ex TP5045-Ex
Long Fei Group	LF1045
U.K.	MTL3046B MTL5042 MTL706^{+}

Ordering Information

Please provide the following data when you place an order

Medium	
Working Pressure (no need to fill if medium is liquid)	
Working Temperature (no need to fill if medium is liquid)	
Density	
Manufacturing Range	
Connection Standards	

MTF MICRO FLOW VARIABLE AREA FLOW METER

MTF Micro Flow Variable Flow Meter can measure the micro flow of liquid or gas, with stable and reliable measurement and wide range of applications. The instrument is equipped with micro-adjustment valve, which is convenient for the user to set the specific flow rate. The instrument is based on the float measurement principle. According to the cut-off flow direction can be divided into side in and side out, bottom in and bottom out two kinds. According to the display mode, it is divided into mechanical pointer type and liquid crystal display with 4-20mA current output type.

This instrument can be widely used in petrochemical, oil refining, fertilizer, iron and steel, pharmaceutical and other industries for micro flow measurement, pipeline purging and process control.

MTF-C type variable area flow meter

MTF-B type variable area flow meter

Operating Principle

The measuring device consists of a metal conical tube in which the float is free to move up and down. As the medium passes bottom-up through the measuring tube, the float adjusts itself so that the buoyant force F and the pressure W equal to the float's gravity G, which is G = F + W.
For the mechanical pointer display type, the measured flow rate corresponds to the position of the float in the measuring cone tube. The flow rate is displayed on the dial by means of a magnetic coupling mechanism. For the digital display type, the measured flow rate corresponds to the position of the float in the measurement cone tube. By means of magnetic coupling structure and circuit conversion, the flow rate is displayed on the liquid crystal screen, and a 4-20 mA signal can be output.

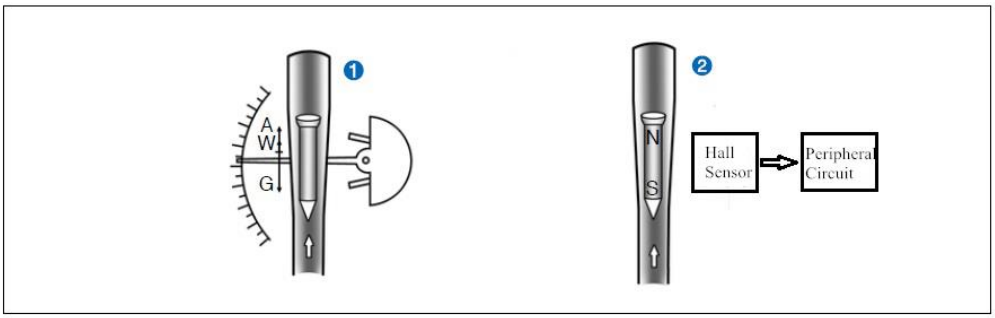


Figure 1: Schematic Diagram of Instrument Operation

Note: The flowmeter is mainly composed of two major parts: the measuring device and the converter. According to the mounting type, it can be divided into two types: vertical installation type and horizontal installation side in side out type.

Product Features

Solid, corrosion resistance:
It is sturdy and corrosion resistant because the measuring cone tube and float are made of stainless steel metal material.

Flexible connections:
It can be selected to connect with tube φ6mm, φ8mm, φ10mm and φ12mm, or flange connection, the flange standard will be determined according to the requirements of users.

The output flow can be controlled:
Horizontal type may be equipped with an inlet needle valve to control flow at the outlet. Constant value can be set.

Applicable to the situation with fluctuations:
For cases where there are large pressure fluctuations at the inlet or outlet, a pressure regulator (constant flow valve) is available as an option to stabilize the flow at the outlet.

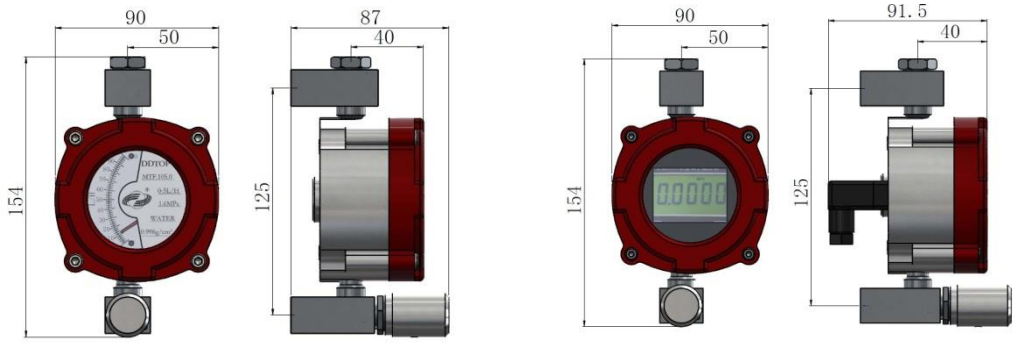
Display type:

Mechanical pointer type; LCD digital type, convenient to read, output 4~20mA current signal.

Technical Parameters

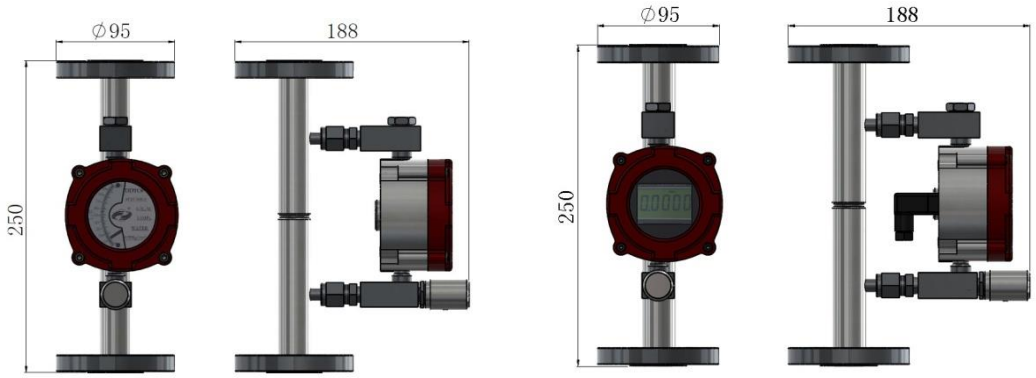
Measurement Scope	20℃， water	0.3-120L/H
	20℃，0.1013MPa air	1.2-3600L/H
Medium Viscosity	η < 5mPa.s	
Range Ratio		10:1
Accuracy		Standard: ±4.0%, Special: ±2.5%
Tube material	Standard	304
	Special	According to customer requirement
Medium Temperature Scope		-40≤T≤300℃
Max Medium Pressure		≤69Mpa
Ambient Temperature		-25℃~+70℃
Connection type	Standard Screw (thread)	NPT 1/4"
	Standard Tube Fitting	φ6mm，φ8mm，φ10mm，φ12mm
	Standard Flange	HG/T20615，HG/T20592 DN15 1.6MPa
	Special	According to customer's requirement
Connection Size	Horizontal Installation	125mm
	Vertical Installation	154mm
	Special	According to customer's requirement
Output Signal		4~20mA with HART communication
Power Supply Inlet		M12x1.5 (inner thread) or according to customer's requirement
Hulling Material		Cast aluminum
Explosion Proof Type		Intrinsically safe Exia II CT4
IP Rating		IP65

Outline Drawings

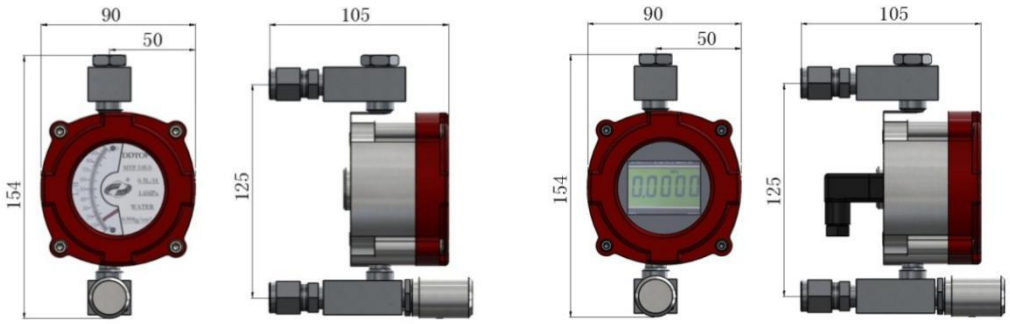


Outline Drawing for Type MTF-C/B.10S

Outline Drawings for Accessories Connection Outline Drawing



Outline Drawing for Type MTF-C/B.10SF15



Outline Drawing for Type MTF-C/B.10S10

Model Selection Table

Model	Code				Contents
MTF-	B				Transmitter (digital display) Variable Area Flow Meter
	C				Local Indicator (pointer display) Variable Area Flow Meter
		10S			Size DN10, side in side out type
		10C			Size DN10, for high pressure
			3		PN16
			4		Class150
			5		PN25
			6		PN40
			7		Class300
			8		PN63
			9		Misc.
				N	Standard NPT1/4
				6	φ6 tube fitting connection
				8	φ8 tube fitting connection

			10						φ10 tube fitting connection
			12						φ12 tube fitting connection
			F						Flange Connection (size)
			T						Special Connection
				/					
					i				Intrinsically safe
						D			Medium Temperature : 0＜T≤200℃
						G			Medium Temperature: -40℃≤T≤0℃ 200℃＜T≤300℃
								S	Horizon Installation of Accessories Connection
								C	Vertical Installation of Accessories Connection
MTF -	☐	☐	☐	☐	/	☐	☐	☐	

Range Ratio 10:1, 100% Flow, Reference Condition: Water 20℃, Air 20℃-0.1013Mpa

	Water Flow	Air Flow	Pressure Loss
Float Number	【L/H】	【L/H】	【kPa】
F002	1	70	0.5
F003	1.4	93	0.6
F004	2	112	0.8
F005	4	125	1
F010	6	232	1.9
F015	8	340	2.3
F030	11	435	2.5
F040	15	530	2.7
F080	20	660	3.6
F125	40	1250	4.2
F200	60	2000	8.5

Flow Valve Flow Parameter Table

Valve Feature	Valve Rob	Water	Air
Taper Tube	φ【mm】	【L/H】	【L/H】
F005-F010	1	30	955
F015-F080	2.5	150	5200
F125-F400	4.5	250	8800

(For use of horizontal gauges)

Ordering Information

When ordering, please provide the following data:

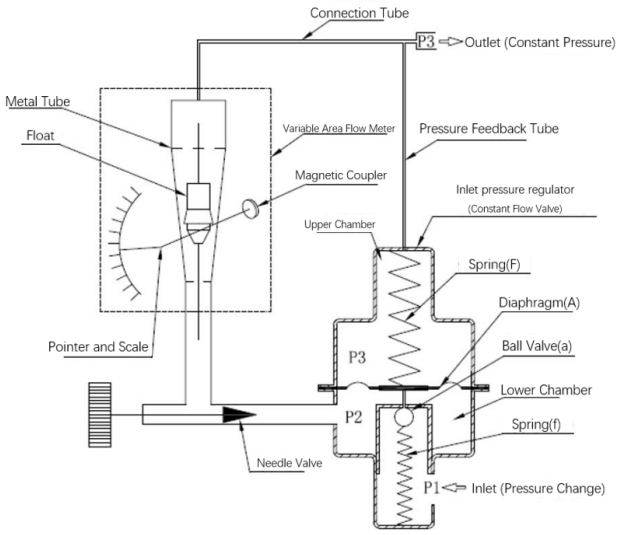
Medium Name	
Working Pressure (no need to fill if medium is liquid)	
Working Temperature (no need to fill if medium is liquid)	
Density	
Production Range	
Connection standard	

MTFC SERIES PURGE DEVICE

MTFC Series Products adopt variable area flow meter for microflow and constant flow valve to form the purge device, to achieve flow measurement and stable output in pressure fluctuation.
As the float flowmeter is made of stainless steel, it has the features of solid and reliable, good appearance quality and stable measuring accuracy. The instrument can be widely used in petrochemical, oil refining, fertilizer, iron and steel, pharmaceutical and other industries in the process control of purging, measuring liquid level, density and so on.

Operating Principle

Inlet Purge device Measuring Principle:



Schematic Diagram of the Inlet Purge device Measurement Principle

As shown in the Purge device Schematic Diagram: (RH Inlet Constant Flow Valve)
Elastic diaphragm is subjected to upward force:

(1) P2A+P1a+f

Elastic diaphragm is subjected to downward force:

(2) P3A+P2a+F

When the pressure is balanced, that is (1) = (2)

(3) P2A+P1a+f= P3A+P2a+F

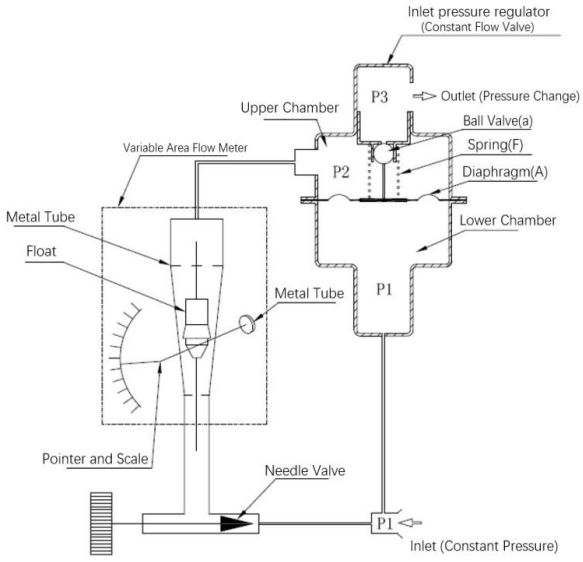
Since the flow rate is determined by the pressure on both sides of the diaphragm, P2-P3, the following formula can be obtained by the formula in (3):

(4) P2-P3 = (F-f)/A-(a/A) (P1-P2)

Since A>>a, (a/A) (P1-P2) is negligible, and F, f, and A are constant values, so P2-P3 is constant value, then the flow rate will not change due to the pressure change at the inlet.

When the medium is an incompressible liquid, the RE inlet can be applied to the outlet pressure variation. For (4), P1 is constant and P3 is changing, so P3 becomes P3+△P,P2 becomes P2+△P, so P2-P3=C is a constant value.

Outlet Purge device Measuring Principle



Schematic Diagram of the Outlet Purge device Measurement Principle

As shown in the Purge device Schematic Diagram: (CH Outlet Constant Flow Valve)
Elastic diaphragm is subjected to downward force:

(1) P2A+P3a+F

Elastic diaphragm is subjected to upward force:

（2）P1A+P2a

When the pressure is balanced，that is (1) = (2)

（3）P2A+P3a+F= P1A+P2a

Since the magnitude of the flow depends on the difference P1-P2 of the pressure regulator diaphragm, we can get by (3):

（4）P1-P2=F/A- (a/A) (P2-P3)

Since A>>a, (a/A) (P2-P3) is negligible, and F and A are constant values, so in (4) P1-P2=C (constant value) then the flow rate will not change due to the change in outlet pressure P3.

In the case of incompressible liquids, the CH outlet constant flow valve can be used for inlet pressure changes. For (4), P2 is constant and P1 is variable, so P1 becomes P1+△P, P2 becomes P2+△P, so P2-P3=C is a constant value.

In the formula above：

A: Diaphragm cross-sectional area

A: Control valve spool (ball) cross-sectional area.

F/f: Spring pressure (spring force).

△P: Change in P2 or P3

Product Features

1. Single-/ double-/ multiple-channel forms (optional)
2. Single-table installation, panel installation (optional)
3. NPT 1/4, ferrule, thread, flange connection (optional)
4. 6mm, 8mm, 10mm, 12-25mm pipeline (optional)
5. Suitable for corrosive media or environments
6. Both mechanical and digital options available
7. Can be used where there are pressure fluctuations in the inlet and outlet.

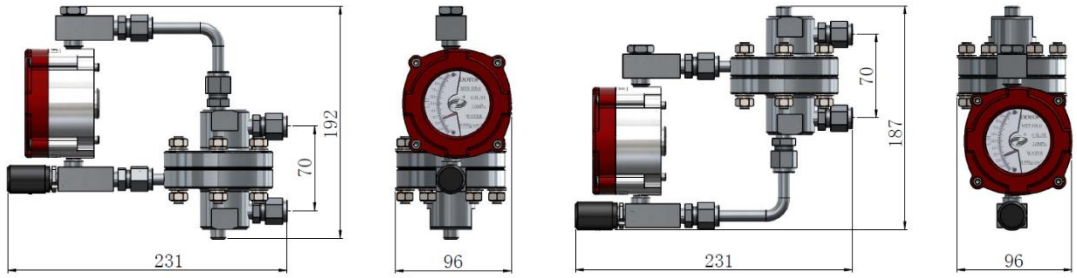
Technical Parameters

Measuring Range	20℃, Water	0.3-120L/H
	20℃, 0.1013MPa Air	1.2-3600L/H
Medium Viscosity	η < 5mPa.s	
Range Ratio	10:1	
Measuring Accuracy	Standard：Level 4	Special：Level 2.5
Wetted Parts Material	Standard	304
	Others	On request
Medium Temperature Range		-40~300℃
Max Medium Pressure		≤1.6Mpa
Ambient Temperature		-25℃~+70℃
Minimum Required differential pressure		See constant flow valve characteristic curve

Connection Type	Standard Thread	NPT 1/4"
	Standard Ferrule	φ6mm，φ8mm，φ10mm，φ12mm
	Standard Flange	HG/T20615 HG/T20592 DN15 1.6MPa
	Others	On request
Installation Type		Flange Connection
		Ferrule Connection
		Panel Installation
Output Signal		4-20mA + HART
Power Supply Inlet		M12×1.5 (Internal Thread) or on request
Enclosure		Aluminum
Explosion-Proof Type		Intrinsically safe Ex ia II CT4
Ip Rating		IP65

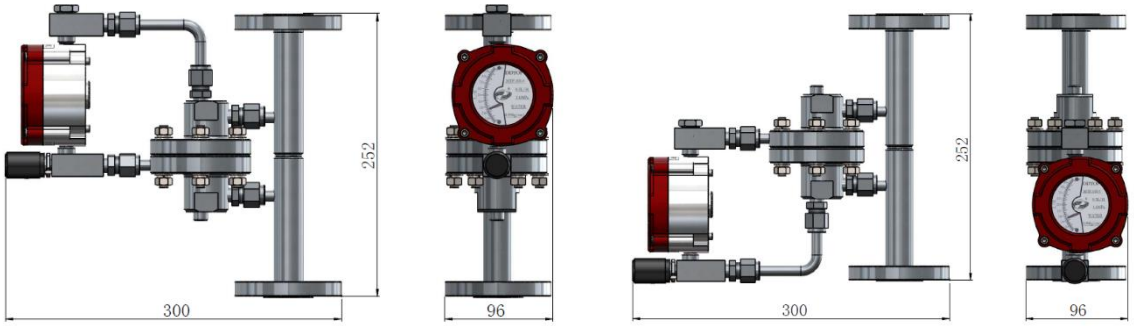
Outline Drawing

1. Single Meter and Single Route Purging Structure



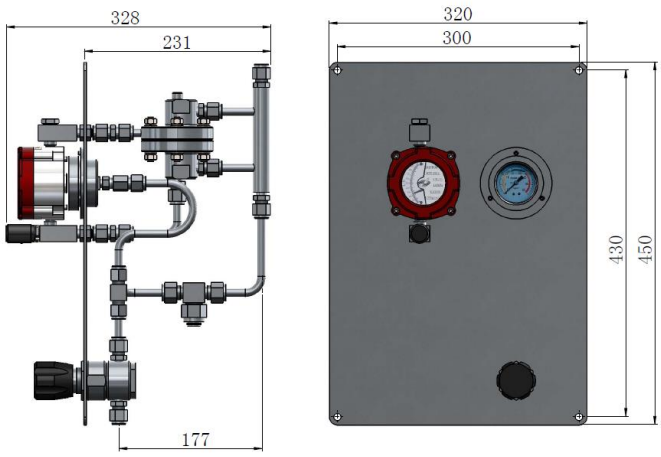
Inlet constant flow valve type　　Outlet constant flow valve type

2. Single Meter and Single Route External Flange Structure



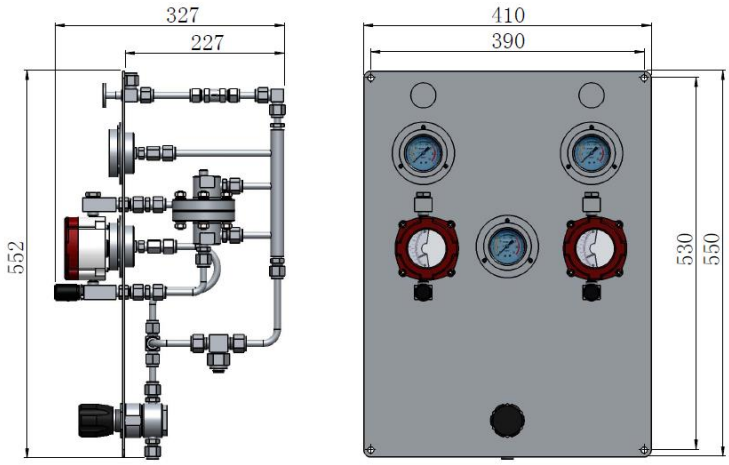
Inlet constant flow valve type　　Outlet constant flow valve type

3. Single Meter and Single Route Panel Accessory Structure



Outlet constant flow valve type

4. Single Meter and Single Route Panel Accessory Structure



Outlet constant flow valve type

Model Selection Table

Model	Code				Contents
MTFC-	B				Transmitter (digital display) variable area flow transmitter
	C				Local indicator (pointer display) variable area flow transmitter
	10S				DN10 Rotameter, side-in-side-out type
		1			1.6MPa
		Q			Other working pressure value
			N		Standard NPT1/4
			6		⌀6 Ferrule connection
			8		⌀8 Ferrule connection
			10		⌀10 Ferrule connection

			12										⌀12Ferrule connection
			F										Flange connection (DN)
			T										Other connection type
				H									Wetted material：304
				R									Wetted material：316L
				Q									Other materials
					/								
					i								Intrinsically safe
						D							Medium Temperature： 0～200℃
						G							Medium Temperature：-40℃-0℃ 200℃-300℃
							RH						Inlet constant flow valve
							CH						Outlet constant flow valve
								D					Single transmitter type
								P					Panel type
											1		Single route
											2		Double route
											M		Other
MTFC-	□	10S	□	□	□	/	□	□	□	□	□		

Model selection example

MTFC-C10S1FH/DCHD1 is Purge device with local indicator, diameter DN10， flange installation type, flange PN1.6， flange DN15， wetted material is 304， working temperature is 0℃～200℃， singe transmitter and single route type.

Flow Table

Range Ratio 10:1, 100% Flow, Reference Condition: Water 20℃, Air 20℃-0.1013MPa

	Water Flow	Air Flow	Pressure Loss
Taper Tube	【L/H】	【L/H】	【kPa】
F002	1	70	0.5
F003	1.4	93	0.6
F004	2	112	0.8
F005	4	125	1
F010	6	232	1.9
F015	8	340	2.3
F030	11	435	2.5
F040	15	530	2.7
F080	20	660	3.6
F125	40	1250	4.2

F200	60	2000	8.5
F300	80	2500	11.7
F350	100	3400	16.6
F400	120	3600	18

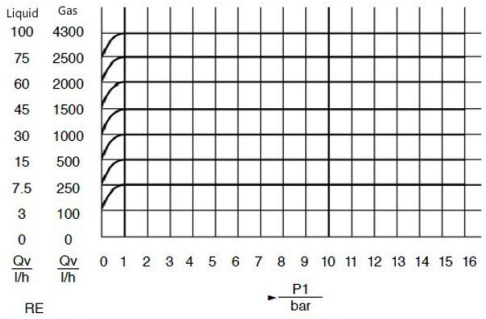
Constant flow valve

Purge devices work with constant flow valve (Normal pressure type, working pressure ≤1.6MPa)

Pressure Regulator Assembly	RH	CH
Application Condition	Inlet pressure changes, outlet pressure is stable.	Inlet pressure is stable, outlet pressure changes.
Medium Status	Liquid or Gas	Gas
Medium Temperature	≤150℃ (Standard)	≤150℃ (Standard)
Inlet Pressure P1	Please see RH graph	-
Outlet PressureP2	-	Please see CH graph
Minimum Pressure Difference △P	0.5 bar	0.15 bar
Sealing Material	Fluorine rubber	Fluorine rubber
Diaphragm Material	PTFE	PTFE

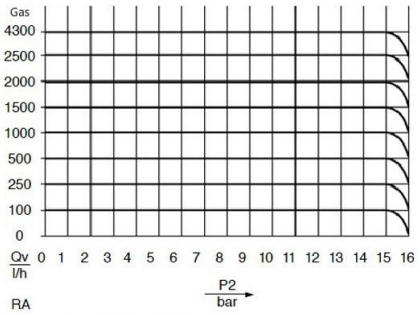
The pressure difference ΔP is the difference between the inlet pressure P1 and the outlet pressure P2.

RH Curve Table



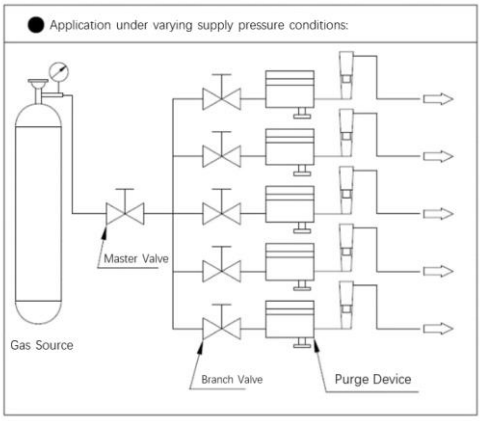
Reference condition: air, 20 Celsius, 1.013 bar abs
Qv: Range

CH Curve Table

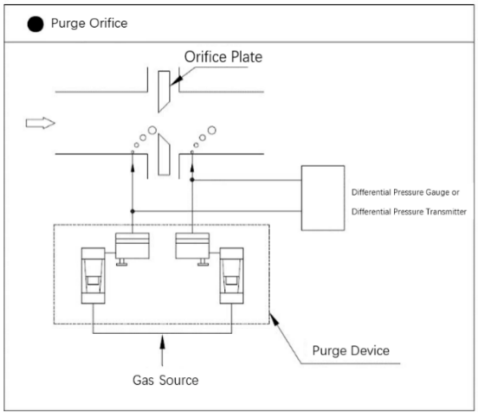


Take inlet pressure is 16 bar as example:
Reference condition: air, 20 Celsius, 1.013 bar abs
Qv: Range

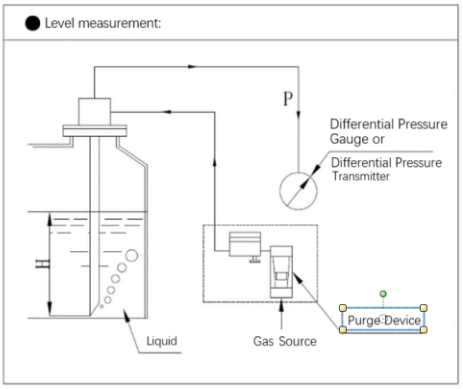
Typical Applications



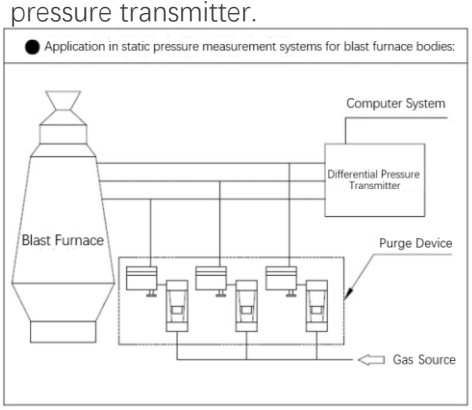
As shown in the diagram above, one main air supply is divided into multiple branch air supply sources. If one or more of the branch sources stops supplying or adjusts the flow, a change in the main source pressure will occur. An inlet (primary pressure) pressure change control type purge device maintains its output flow constant.



When using the orifice plate to measure the flow of corrosive liquids or liquids containing solid particles, a double-mounted purge device is used to continuously and quantitatively blow air into the pressure ports before and after the orifice plate to ensure that corrosive liquids or liquids containing solid particles do not flow into the pressure guide tube of the differential pressure meter or differential pressure transmitter.



This is a method of detecting the level of liquid by measuring the back pressure at the end of the blowpipe. The purge device, which uses the outlet (secondary pressure) pressure change control type, continuously and quantitatively blows gas into the measurement object. A differential pressure transmitter or manometer is usually used to display the liquid level.



By detecting the static pressure of each section of the blast furnace body and calculating the air permeability resistance index to forecast the furnace condition, so as to take timely measures to ensure normal smelting, thus achieving the purpose of increasing production and energy conservation.

Precautions for installation of purge device

- Please select the appropriate location for installation of the flow purge device to ensure easy adjustment, cleaning, and removal of the purge device.
- As the float flow rate of the purge device is accompanied by a magnetic coupling drive, it is necessary to ensure that the disturbing magnetic field generated by other working equipment does not affect the measurement results of the flow meter.
- When installing, ensure that the purge device is stable and, if necessary, fitted with a mounting bracket in an appropriate location.
- The installation dimensions shall not exceed the given dimensions by too much or too little in order to avoid tensile or compressive forces acting on the purge device.
- When the liquid medium contains ferromagnetic particles, a magnetic filter must be installed before the instrument.
- To ensure proper operation of the instrument, the medium flowing through the instrument must be clean and free of impurities such as dust particles. Although our company installs a miniature filter, it is strongly recommended that customers install the filter upstream as it is not easy to disassemble and clean.

Handling of purge devices

- Pay attention to be sure that the medium flows in the same direction as required by the instrumentation device. Close all fine adjustment needle valves prior to installation of the instrument.
- In fluid measurement, drain and purge the piping before operation to avoid shock action and open the valve slowly.
- In gas measurement, open the valve slowly to adjust the pressure to the operating pressure.
- In the case of the panel combination type, a pressure-reducing filter is usually installed at the inlet, and it should be noted that in normal operation, the pressure value is adjusted according to the order.

Diagnosis, analysis, and treatment of common faults

Issue	Reason	Solution
Flow cannot be adjusted to the set value	Inlet pressure is too low	Adjust the pressure to the required value
	Inlet magnetic filter plugged	Clean the magnetic filter
	Flow meter is blocked by dirt	Clean the magnetic filter or tube
	Constant flow valve diaphragm is damaged	Contact the supplier

Customization Requirements

This Catalog lists only a selection of structures for illustration. There are many forms of installation in practice, which can result in various combinations or connections. If you have special requirements, we will provide you with an overall plan, model, etc. that meets your requirements.