

Thermal Gas Mass flow meter

FTM-Series



| Description

- Thermal gas mass flow meter is designed on the basis of thermal dispersion, and adopts method of constant differential temperature to measuring gas flow.
- It has advantages of small size, easy installation, high reliability and high accuracy, etc.
- The meter contains two platinum resistance temperature sensors.
- The thermal principle operates by monitoring the cooling effect of a gas stream as it passes over a heated sensor.
- Gas flowing through the sensing section passes over two sensors one of which is used conventionally as a temperature sensor, whilst the other is used as a heater.
- The temperature sensor monitors the actual process values while the heater is maintained at a constant differential temperature above this by varying the power consumed by the sensor.
- The greater the gas velocity, the greater the cooling effect and power required to maintain the differential temperature.
The measured heater power is therefore a measure of the gas mass flow rate.

| Features

- Measuring the mass flow or volume flow of gas.
- Do not need to do temperature and pressure compensation in principle with accurate measurement and easy operation.
- Wide range: 0.5Nm/s ~ 100Nm/s for gas. The meter also can be used for gas leak detection.
- Good vibration resistance and long service life. No moving parts and pressure sensor in transducer, no vibration influence on the measurement accuracy.
- Easy installation and maintenance. If the conditions on site are permissible, the meter can achieve a hot-tapped installation and maintenance. (Special order of custom-made)
- Digital design, high accuracy and stability.
- Configuring with RS485 or HART interface to realize factory automation and integration.

Technical Parameters

Description	Specifications
Measuring Medium	Various gases (Except the acetylene)
Pipe Size	DN10 ~ DN4000mm
Velocity	0.1 ~ 100 Nm/s
Accuracy	±1 ~ 2.5%
Working Temperature	Sensor: -40℃ ~ +220℃ Transmitter: -20℃ ~ +45℃
Sensor	Insertion Sensor: Medium pressure ≤ 1.6MPa Flanged Sensor: Medium pressure ≤ 1.6MPa Special pressure please contact us.
Power Supply	Compact type: 24VDC or 220VAC, Power consumption ≤ 18W Remote type: 220VAC, Power consumption ≤ 19W
Response Time	1s
Output	4~20mA (Maximum load 500Ω), Pulse, RS485 () and HART
Alarm Output	1~2 line Relay, Normally Open state, 10A/220V/AC or 5A/30V/DC
Sensor Type	Standard Insertion, Hot-tapped Insertion and Flanged
Construction	Compact and Remote
Pipe Material	Carbon steel, stainless steel, plastic, etc
Display	4 lines LCD Mass flow, Volume flow in standard condition, Flow totalizer, Date and Time, Working time, and Velocity, etc.
Protection Class	IP65
Sensor Housing Material	Stainless steel (316L)
Repeatability	±0.2% of full scale

Flow range

(Unit: Nm³/h, The follow table can be extended)

(mm)	Air	Nitrogen (N ₂)	Oxygen (O ₂)	Hydrogen (H ₂)
15	65	65	32	10
25	175	175	89	28
32	290	290	144	45
40	450	450	226	70
50	700	700	352	110
65	1,200	1,200	600	185
80	1,800	1,800	900	280
100	2,800	2,800	1,420	470
125	4,400	4,400	2,210	700
150	6,300	6,300	3,200	940
200	10,000	10,000	5,650	1,880
250	17,000	17,000	8,830	2,820
300	25,000	25,000	12,720	4,060
400	45,000	45,000	22,608	7,200
500	70,000	70,000	35,325	11,280
600	100,000	100,000	50,638	16,300
700	135,000	135,000	69,240	22,100
800	180,000	180,000	90,432	29,000
900	220,000	220,000	114,500	77,807
1,000	280,000	280,000	141,300	81,120
1,200	400,000	400,000	203,480	91,972
1,500	600,000	600,000	318,000	101,520
2,000	700,000	700,000	565,200	180,480

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The flow rate in standard condition:

The flow rate is in the condition of 20°C temperature and 101.325kPa pressure.

The unit of flow rate is optional: Nm³/h, Nm³/min, L/h, L/min, t/h, t/min, kg/h or kg/min.

The reduction formula of flow rate in working condition and flow rate in standard condition:

$$Q_s = \frac{0.101325 + p}{0.10325} \times \frac{273.15 + 20}{273.15 + t} \times Q_n$$

Qs: The flow rate in standard condition (Nm³/h).

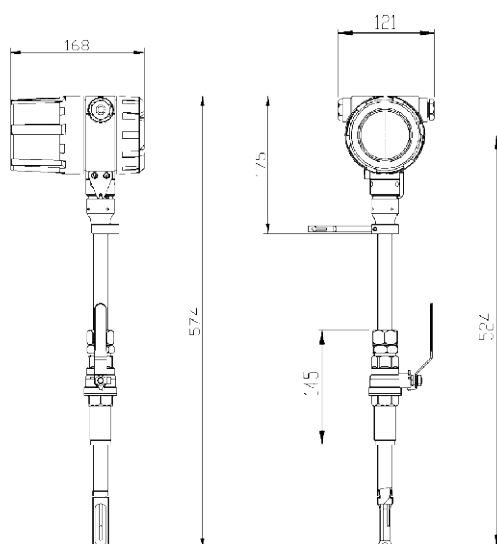
Qn: The flow rate in working condition (m³/h).

t: The medium temperature in working condition (°C).

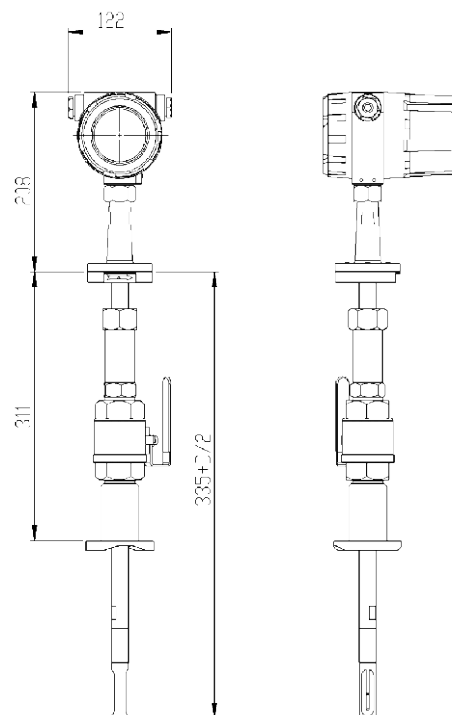
p: The medium pressure in working condition (Gauge pressure, MPa).

Dimensions size

Standard insertion sensor



Hot-tapped insertion sensor



Installation size

JIS 10K Plane and surface plate flat welding steel pipe flanges (Unit: mm)

Nominal Diameter	Flange Outer Diameter	Center Hole	Screw Hole	Screw Thread	Sealing Face		Flange Thickness	Pipeline Length
					d	f		
DN	D	k	n X L				C	L
15	95	70	4 X 15	M12	51	2	14	180
20	100	75	4 X 15	M12	56	2	16	180
25	125	90	4 X 19	M12	67	2	16	180
32	135	100	4 X 19	M16	76	2	18	180
40	140	105	4 X 19	M16	81	2	18	180
50	155	120	4 X 19	M16	96	2	20	200
65	175	140	4 X 19	M16	116	2	20	200
80	185	150	8 X 19	M16	126	2	20	250
100	210	175	8 X 19	M16	151	2	22	250
125	250	210	8 X 23	M20	182	2	22	250
150	280	240	8 X 23	M20	212	2	24	250
200	340	295	12 X 23	M20	262	2	24	300
250	400	355	12 X 25	M22	324	2	28	300
300	445	400	16 X 25	M22	368	3	29	300

