MK-TMFM- S.S.S - size

MYKO Thermal 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 .

Theory:

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 whilst 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.

Feature :

- 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.
- Digital design, high accuracy and stability.
- Configuring with RS485 interface to realize factory automation and integration

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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?
Working Pressure	Insertion Sensor: medium pressure= 1.6MPa Flanged Sensor: medium pressure= 1.6MPa+
Power Supply	24VDC or 220VAC, Power consumption =18W
Response Time	1s
Output	4-20mA (optoelectronic isolation, maximum load 500Ù), Pulse, RS485 (optoelectronic isolation) 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 (316)

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Upper Range Value of Common Gas (Unit: Nm3/h)

Nominal Diameter (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	1200	1200	600	185
80	1800	1800	900	280
100	2800	2800	1420	470
125	4400	4400	2210	700
150	6300	6300	3200	940
200	10000	10000	5650	1880
250	17000	17000	8830	2820
300	25000	25000	12720	4060
400	45000	45000	22608	7200
500	70000	70000	35325	11280
600	100000	100000	50638	16300
700	135000	135000	69240	22100
800	180000	180000	90432	29000
900	220000	220000	114500	77807
1000	280000	280000	141300	81120
1200	400000	400000	203480	91972
1500	600000	600000	318000	101520
2000	700000	700000	565200	180480

The flow rate in standard condition: The flow rate is in the condition of 20℃ temperature and 101.325kPa pressure.

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The Density and Conversion Coefficient of Common Gas

	Gas	Specific heat (Kal/g*?)	Density (g/l, 0?)	Conversion Coefficient
0	Air	0.24	1.2048	1.0000
1	Argon (Ar)	0.125	1.6605	1.4066
2	Arsine (AsH^3)	0.1168	3.478	0.6690
3	Boron Tribromide (BBr^3)	0.0647	11.18	0.3758
4	Boron Trichloride (BCl^3)	0.1217	5.227	0.4274
5	Boron Trifluoride (BF^3)	0.1779	3.025	0.5050
6	Borane (B^2H^6)	0.502	1.235	0.4384
7	Carbon Tetrachloride (CCl^4)	0.1297	6.86	0.3052
8	Carbon Tetrafluoride (CF^4)	0.1659	3.9636	0.4255
9	Methane (CH^4)	0.5318	0.715	0.7147
10	Ethylene (C^2H^4)	0.3658	1.251	0.5944
11	Ethane (C^2H^6)	0.4241	1.342	0.4781
12	Allylene (C^3H^4)	0.3633	1.787	0.4185
13	Propylene (C^3H^6)	0.3659	1.877	0.3956
14	Propane (C^3H^8)	0.399	1.967	0.3459
15	Butyne (C^4H^6)	0.3515	2.413	0.3201
16	Butene (C^4H^8)	0.3723	2.503	0.2923
17	Butane (C^4H^{10})	0.413	2.593	0.2535
18	Pentane (C^5H^{12})	0.3916	3.219	0.2157
19	Carbinol (CH^3OH)	0.3277	1.43	0.5805
20	Ethanol (C^2H^6O)	0.3398	2.055	0.3897
21	Trichloroethane (C3H3Cl3)	0.1654	5.95	0.2763
22	Carbon Monoxide (CO)	0.2488	1.25	0.9940
23	Carbon Dioxide (CO2)	0.2017	1.964	0.7326
24	Cyanide (C2N2)	0.2608	2.322	0.4493
25	Chlorine (Cl2)	0.1145	3.163.	0.8529

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26	Deuterium (D^2)	1.7325	0.1798	0.9921
27	Fluoride (F^2)	0.197	1.695	0.9255
28	Germanium Tetrachloride ($GeCl^4$)	0.1072	9.565	0.2654
29	Germane (GeH_4)	0.1405	3.418	0.5656
30	Hydrogen (H_2)	3.4224	0.0899	1.0040
31	Hydrogen Bromide (HBr)	0.0861	3.61	0.9940
32	Hydrogen Chloride (HCl)	0.1911	1.627	0.9940
33	Hydrogen Fluoride (HF)	0.3482	0.893	0.9940
34	Hydrogen Iodide (HI)	0.0545	5.707	0.9930
35	Hydrogen Sulfide (H_2S)	0.2278	1.52	0.8390
36	Helium (He)	1.2418	0.1786	1.4066
37	Krypton (Kr)	0..0593	3.739	1.4066
38	nitrogen (N_2)	0.2486	1.25	0.9940
39	Neon (Ne)	0.2464	0.9	1.4066
40	Ammonia (NH_3)	0.5005	0.76	0.7147
41	Nitric Oxide (NO)	0.2378	1.339	0.9702
42	Nitrogen Dioxide (NO_2)	0.1923	2.052	0.7366
43	Nitrous Oxide (N_2O)	0.2098	1.964	0.7048
44	Oxygen (O_2)	0.2196	1.427	0.9861
45	Phosphorus Trichloride (PCl_3)	0.1247	6.127	0.3559
46	Phosphorane (PH_3)	0.261	1.517	0.6869
47	Phosphorus Pentafluoride (PF_5)	0.1611	5.62	0.3002
48	Phosphorus Oxychloride ($POCl_3$)	0.1324	6.845	0.3002
49	Silicon Tetrachloride ($SiCl_4$)	0.127	7.5847	0.2823
50	Silicon Fluoride (SiF_4)	0.1692	4.643	0.3817

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51	Silane (SiH_4)	0.3189	1.433	0.5954
52	Dichlorosilane (SiH_2Cl_2)	0.1472	4.506	0.4095
53	Trichlorosilane ($SiHCl_3$)	0.1332	6.043	0.3380
54	Sulfur Hexafluoride (SF_6)	0.1588	6.516	0.2624
55	Sulfur Dioxide (SO_2)	0.1489	2.858	0.6829
56	Titanium Tetrachloride ($TiCl_4$)	0.1572	8.465	0.2048
57	Tungsten Hexafluoride (WF_6)	0.0956	13.29	0.2137
58	Xenon (Xe)	0.0379	5.858	1.4066