



**기체질량유량계
(Thermal Mass Flow meters)**





◆ The principle of the measurement

This flow meter is thermal dispersion type and consists of 2 platinum RTD.
 One sensor has the function for the measurement of flow velocity and heating and the other sensor measures the fluid (gas temperature).
 Since the heat of heated sensor is depleted by the gas, the demand of electric current is increased.
 The demand of electric current is increased in proportion to flow amount and you can measure the mass of fluid (gas) at this time.

◆ Characteristics

1. It is possible to measure 4 pieces of each different process flows with one flow meter.
2. High accuracy and credibility.
3. The range of flow measurement is wide.
(Turn Down Ratio Max 1000:1)
4. The temperature is automatically compensated and pressure compensation isn't needed.
5. It isn't influenced by the change of temperature and pressure.
6. Wide temperature range (-40°C ~ 400°C)
7. It is also smoothly operated under the flow of low flow velocity.(0,07 m/sec)
8. Easy to install and no need by-pass.
(ball valve Retractor function)
9. It is possible to exchange sensor or MP-Board at the working field. (No need separate Factory Recalibration)

◆ Application

1. Utility gas (City gas, hydrogen, nitrogen, oxygen, argon, air, etc)
2. Stack exhaust gas (Chimney, large duct)
3. Auto company, semiconductor, Petro-chemical, Steel, Sewage treatment plant)
4. Institute, laboratory
5. HVAC

◆ Common specs.

1. Measuring Dia. : 6 ~ 5,000 mm
2. Operating pressure : 0 ~ 35 kg/cm²
3. Operation temperature : -40°C ~ 400°C
4. Measuring range : Turn Down Ratio 300:1
5. Connection Rating : NPT, Flange(ANSI,DIN,JIS,etc), Insertion NPT
6. Power : 24VDC or AC 110 or AC 220V, 60Hz
7. Output : 4-20mA.DC, Pulse, Relay, RS232/485
8. Accuracy : 0.5% of (F.S)

◆ Characteristics

- * Close loop control.
- * Power AC 220V (AC110V, DC24V-Option).
- * 24 bit analogue digital converter (ADC).
- * Output Accuracy : $\pm 0.1\%$, $\pm 2.5 \mu A$ (4-20mA).
- * High functional interface RS-485/232C.
- * No need separate temperature and pressure compensation.
- * The straight for upstream line is small (7D~5D)
- * Suitable for wide flow range.
(Turn down 100:1), (Turn down 1000:1)
- * Response speed (1sec) for flow change is fast.
- * Possible to indicate the value of flow velocity.
- * Self check function and 24 hours LCD Backlight function
- * Average profile factor function (C-Factor : Option)
- * Various unit setting (Nm³.h, Nm³/m, NI/h, m/s···)
- * CE, EEx

◆ Functions

- * Accuracy
Within calibration range 10 ~ 100% : reading $\pm 2\%$
Within calibration range 10% : $\pm 0.5\%$ of F.S
- * Repeatability
 $\pm 0.2\%$ of full scale
- * Temperature compensation
F within $\pm 0.02\%$ reading / $\pm 50^\circ F$
F within $\pm 0.03\%$ reading / $\pm 50^\circ F \sim 100^\circ F$
C within $\pm 0.04\%$ reading / $\pm 25^\circ C$
C within $\pm 0.06\%$ reading / $\pm 25 \sim 50^\circ C$
- * Pressure compensation
It can be ignored within ± 50 psia(3.4bar) and it needs special calibration for high pressure.
- * Response time
1 sec within 63% of final flow velocity value.

◆ Operation specs.

- * Gas
All gases that chemical reaction isn't happened.
- * Gas pressure range
Compressed fitting : 250 psig (16 barg) std.
500 psig (34.5 barg) option
150 lb flange, JIS 10K RF : $-4^\circ C \sim 65^\circ C$
: 15.9 barg
low pressure Retract valve : 7 barg
high pressure Retract valve : 70 barg
- * Pressure depression
It can be ignored in the pipe size of 3 inch and above.
- * Gas & Environmental temperature
Gas ······ : $-10^\circ C \sim 80^\circ C$ std.
max. $400^\circ C$ (option)
Environment ······ : $-20^\circ C \sim 50^\circ C$
- * Gas leakage range.
Maximum 5×10^{-4} with helium
- * Power supply
DC 24V $\pm 10\%$, 625mA (Option)
AC 220V $\pm 10\%$, 15watts
AC 110V (option)
- * Output signal
Linear 4-20mA, Pulse, Alarm
- * Alarm
Possible to adjust high & low contact point.
Relay contact point output
(Maximum 42VDC or VAC, 140 mA)
- * LCD Display
Figure & letter type arrayal 2x16 24 hours back-light LCD.
Adjustment in window by magnetic sensor or RS-485/232C interface
Adjustment factor : flow range (50~100%)
Response time (1 ~ 7 seconds)
Zero & Span
High and low alarm setting
- * Totalizer
7 Digits (9,999,999.9)
Software or LCD windows button.
Resetting by on-board switch.