Thermal Mass Flowmeter
StaMass TMF200 - Insertion

Introduction

Mass thermal flowmeter measures gas flow based on the concept of convective heat transfer. It contains two sensors - resistance temperature detectors (RTDs), one of the sensors is heated by an integrated circuit and functions as the flow sensor, while a second detector acts as the reference sensor, and determines the gas temperature. The meter maintains a continuous overheat between the flow and reference sensor. As gas flows by the heated sensor, flowing gas molecules transport heat away from the sensor and as a result, the sensor cools and the energy is lost. The resulting difference in temperature between the two sensors creates a precisely measurable sensor signal that is a function of the flow velocity: the greater the difference in temperature, the greater the gas' flow velocity over the sensor element.

Based on above principle, Stein mass flowmeter StaMass TMF200 insertion version is designed for all industries using, especially for larger pipeline. Our customer could benefit from it's reliable performance, less pressure drop, high turndown ratio, high repeatability, easy to install and use etc.

Characteristics

4"…48" (DN100…DN1200)

Accuracy: 2% of reading

Idea for low flow rate

High reliability

No need pressure/temperature compensation

Easy to install and maintain

Applications

Water treatment

Chips manufacturing

Power plant

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Specifications

Measuring range	See measuring range below for details
Applicable medium	Air / Gas
Nominal diameter	4"…48" / DN100…DN1200
Accuracy	2%
Repeatability	±0.25% of reading
Operating voltage	85...230VAC; 18…36VDC
Output signal	Pulse + 4…20mA
	Pulse + 4…20mA with HART
	Modbus RS485
Sensor material	316 stainless steel, Hastelloy C,Titanium
Transmitter housing material	Aluminum alloy
Flange material	Stainless steel
Response time	<100ms
Sensibility	<0.05m/s
Medium Temperature	-13…248°F / -25...120°C (Standard)
	-13…482°F / -25...250°C (High temperature)
Ambient Temperature	Sensor: -13…140°F / -25...60°C
Ambient Humidity	≤85%RH (68°F / 20°C)
Power consumption	Less than 20W
Electrical connection	M20 × 1.5
Process connection	3/4'' in R coupling
Exproof	Exd II CT6 Gb
Protection class	Integrated type: IP65
	Remote type: IP65(transmitter), IP68(sensor)

Reference conditions of measurement accuracy

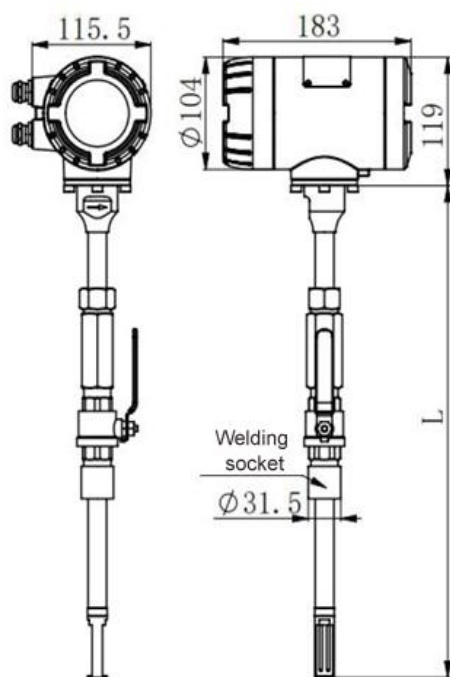|	
Ambient temperature	20°C / 68°F
Medium temperature	20°C / 68°F
Pressure	1 bar
Power	24VDC + 15%
Stability time	25 mins
Upstream straight pipeline	10 x DN
Downstream straight pipeline	5 x DN
Flow state	Uniform distribution

Features

Auto "ZERO" calibration	See manual for details
Self-monitoring and diagnostic	Monitor citation circuit, electrode and transmitter malfunction
Change flow direction real time	See manual for details
Bi-directional measurement	Measuring both forward and reverse flow
Flow rate unit selectable	Nm^3/h, Nm^3/min, L/h, L/min, t/h, kg/h, kg/min, SCFM…...
Damping time	0…32s programmable
Low flow cut off	Adjustable in 0...10%
Output	Relay, Pulse, 4~20mA, RS485, HART
Display	Instantaneous/accumulated flow rate, current, alarm, flow velocity

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Measuring range and nominal diameter

Inch	Measuring range (SCFM)
4	7.5…1700
5	13…2700
6	19…3900
8	31…7000
10	62…11000
12	95…15800
14	125…21500
16	156…28000
18	185…35600
20	220…44000
24	310…63000
28	375…86000
32	500…112000
36	625…143000
40	750…176000
48	1250…253000

DN (mm)	Measuring range (Nm^3/h)
100	12…2800
125	20…4400
150	30…6300
200	50…11300
250	100…17600
300	150…25400
350	200…34600
400	250…45200
450	300…57200
500	350…70600
600	500…101700
700	600…138400
800	800…180800
900	1000…228900
1000	1200…282600
1200	2000…406900

Dimension in mm

Inch	DN	L
4"…16"	DN100-DN400	466
18"…28"	DN450-DN700	586
32"…40"	DN800-DN1000	786
48"	DN1100-DN1200	1086

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Order Code

Example: TMF200-I250ABKSADP0Y

1. TMF200-

F	Integral transmitter
R	Remote transmitter

2. Pipe size

100	4'' (DN100)
125	5'' (DN125)
150	6'' (DN150)
200	8'' (DN200)
250	10'' (DN250)
300	12'' (DN300)
350	14'' (DN350)
400	16'' (DN400)
450	18'' (DN450)
500	20'' (DN500)
600	24'' (DN600)
700	28'' (DN700)
800	32'' (DN800)
900	36'' (DN900)
1000	40'' (DN1000)
1200	48'' (DN1200)

3. Output

A	Pulse 4...20mA
H	Pulse 4…20mA with HART
R	Modbus RS485／Pulse／4…20mA

4. Accuracy

B	2%

5. Sensor material

K	316L Stainless steel
C	Hastelloy C
T	Titanium

6. Body material

S	304 stainless steel
L	316L stainless steel

7. High temperature

A	-13…248°F / -25...120°C
B	-13…482°F / -25...250°C

8. Power supply

D	18…36VDC
T	85...230VAC

9. Ex-proof

P	Non-hazardous area
E	Hazardous area

10. Connectivity from Sensor to Remote Transmitter

0	Select 0 for integral transmitter
5	Cable length: 5m / 16ft
	Custom cable length: 2-50m (6.5…164ft)

11. Welding socket

N	None
Y	Welding socket is included

* Isolation valve is included by default