SFM800 Hot Gas Mass Flow Meter

Breakthrough traditional measurement technology

☐ Proprietary traffic data model algorithm; Fuzzy theory control temperature andhumidity algorithm;

☐ High performance intelligent microprocessor and analog and digital conversion chip;

☐ Wide range ratio: 500:1;Large diameter, low flow rate, pressure loss can be ignored;

☐ Direct measurement of mass flow without temperature and pressure compensation;

☐Low velocity measurements are very sensitive;

☐Convenient in design, selection, installation and use;

☐Suitable for all kinds of single or mixed gas flow measurement.

Applications

☐Public works - monitoring of electricity, gas and water treatment

Pipe gas;General system;Biogas;The gas;Natural gas;Liquefied petroleum gas.Boiler preheating air

☐Oil and gas industry

Energy exchange;Well filling gas recovery;Gas metering;Gas quality analysis;Leakage gas test;Natural gas measurement;Monitoring of flare gas

☐Power industry

Gas measurement during gas distribution in fuel system;Measurement of various gases in boilers and auxiliary systems;Gas measurement in gas furnace;Hydrogen measurement;Measurement of primary and secondary air of blast furnace in power

Plant.

☐The chemical industry

Flue gas cycle test;Measurement of gas flow in the sampling system;Gas flow measurement of induced draft fan;Ammonia gas measurement in fertilizer plant;Battery plant various gas flow measurements

☐Metallurgical industry

Measurement of aeration in steel works;Measurement of blast furnace gas in iron works;Measurement of coke oven gas in coking plant;Measurement and control of heating furnace gas (blast furnace gas, coking gas, natural gas, etc.) in rolling mills;Control of hydrogen, oxygen, nitrogen and other gases in heat treatment quenching furnace

☐Pulp and paper industry

Measurement of gases in wastewater treatment systems;Flue flow monitoring;Boiler recovery of secondary/tertiary air;Boiler gas and air supply measurement

☐Food and medicine

Addition of fresh air during processing operation;Co2 treatment in breweries;The flow of hot air in the bottle sterilizer;Measurement of gas flow during thermal oxidation;Ventilation system;Boiler intake, exhaust, process control

☐Environmental protection

Gas measurement in the process of biogas utilization;Chlorine gas measurement in the process of chlorine gas treatment;Gas measurement of aeration tank in sewage treatment process;Monitor the displacement of SO2 and NOX in chimney flue

☐Other industries

Factory compressed air measurement;Fuel control by powder/gas ratio in pulverized coal combustion process;Thermal discharge control of vertical mill in cement industry

Product features

☐The patented platinum RTD sensor with high stability is adopted

☐True mass flowmeter without temperature and pressure compensation.The mass flow rate or standard flow rate of the gas can be obtained.

☐The range ratio is 500:1, which can be extended according to user's requirement

☐Large pipe diameter and small flow can be measured, and the minimum flow can be measured as low as 0.5Nm/S

☐No moving parts, vibration can be ignored

☐Straight pipe section is not required to be high 1-2d

☐It is independent of the temperature and pressure of the medium

☐Digital design, digital circuit measurement, accurate, easy maintenance

☐Not sensitive to small particles such as dust

☐Online continuous loading and unloading, easy maintenance

The working principle

SFM800 series gas thermal mass flowmeter is a flowmeter based on thermal diffusion principle. That is, when the fluid flows through the heating object, the heat loss of the heating object is proportional to the flow rate of the fluid. Specifically, the sensor of the flowmeter has two standard RTD, one is used as a heat source, the other is used to measure the temperature of the fluid, the fluid flow, the temperature difference between the two is non-linear relationship with the size of the flow, the meter can convert this relationship into the linear output of the measurement flow signal. There are two design methods for flowmeter manufacturedby thermal diffusion principle: one is based on thermostatic difference principle; The second is based on the constant power principle. Based on the common data model: P/ train T=A+B(Q) n. where: P -- dissipated power; T -- temperature difference between two sensors; Q -- mass flow; N -- exponential coefficient; A and B are the coefficient related to the thermal performance of the gas.

Thermostatic difference principle: T remains constant, dissipated power P and fluid flow Q into an exponential function increasing relationship.

Constant power principle: dissipated power constant, temperature difference delta T and the flow of fluid Q into the relationship of exponential decline function.

Our company adopts the thermostatic difference method.

Performance indicators：

Measuring range	0.5～100Nm/s
accuracy rating	1.0% reading, 0.5% full range
range ratio	Typically 100:1 (depending on the range of calibrated flows)）
Pipe diameter range	15～8000mm
Range of application	Suitable for all kinds of single or mixed gases.Dust, sand, and other corrosive gases
Ambient temperature range	- 40 ℃ ~ + 85 ℃ (not shown), and 30 ℃ ~ + 70 ℃ (show), humidity ＜90% RH
Dielectric temperature range	-40℃～+100℃，-40℃～+200℃，-40℃～+350℃
Sensor diameter	Φ2.5、Φ3、Φ4
Insert sensor probe rod diameter	Φ19、Φ25
Sensor material	316 stainless steel, hastelloy, titanium
Probe rod material (protective cover)	316G stainless steel (standard), hastelloy
Measure media flow in both directions	
Analog output	Output flow: 4-20 mADC , temperature: 4-20 mADC, maximum load: 500 Ω
Cumulative pulse output	
Power supply	The whole machine DC24V/AC220V，Split converter AC220V

Pressure of work	plug-in≤2.5mpa,pipeline≤4.0mpa
Installation process	Insert type (clamp sleeve, clamp sleeve + ball valve, flange connection)，Pipe type (flange, threaded connection)
Explosion-proof grade	Intrinsic safety, flameproof
Protection grade	IP65

Structure form and installation size

SFM800 series flowmeter

1、Pipeline

Nominal diameter	DN15	DN25	DN40	DN50	DN80	DN100	DN150	DN200	DN250	DN300
L(mm)	300	300	350	350	450	450	500	600	600	650
H(mm)	300	300	300	300	350	380	400	450	500	550

Installation: pipe type has no requirement for straight pipe section

2、plug-in

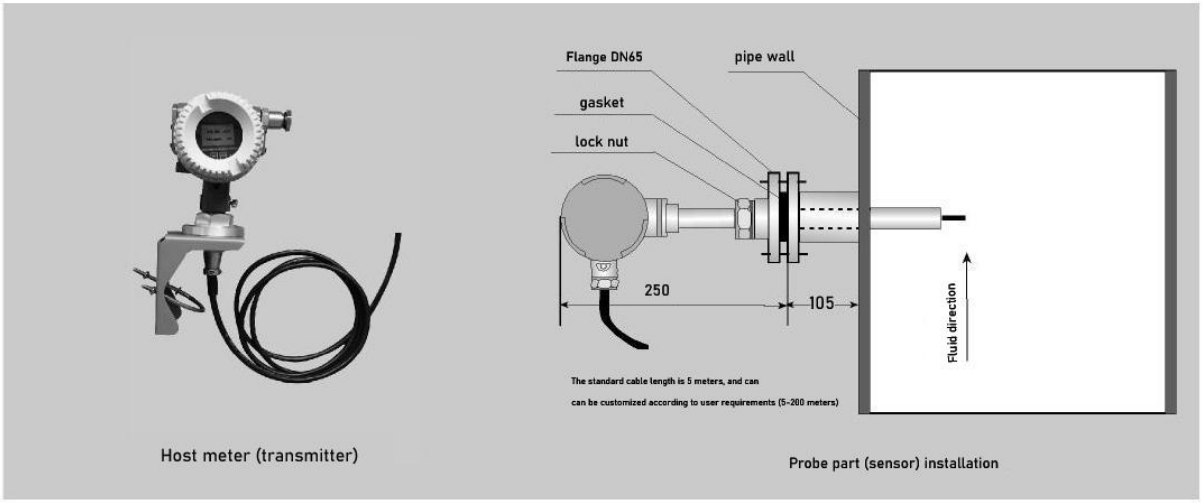
One-piece

Split type

Ball valve connection

Installation：

The straight pipe section is required to be 20D before and 10D after. Insertion depth: when DN≤ 1000, the measuring head should be inserted into the center of the pipe; when DN > 1000, the measuring head should be inserted into about 1/4 of the pipe, that is, at the average flow rate.



SFM800 series flowmeter is the first choice for measuring flue gas in power plant

Due to complex working conditions, large dust, high temperature, moisture content, mud, corrosion, large pipe diameter, traditional measurement methods, easy to plug, and based on the principle of differential pressure, in the case of low pressure, the blind area of measurement. FM flue gas flowmeter, using special flow data model and fuzzy theory to measure and control temperature and humidity algorithm, through two smooth probe (sensor) thoroughly solve the above problems

Model code

model	coding	instructions
SFM800	……	Hot gas mass flowmeter
The connection method	F…… J……	pipeline plug-in
Pipe diameter	D15～8000……	Nominal diameter15～8000
Structure form	L…… R……	Integration (standard) Split type
The power supply mode	24D…… 220……	24VDC（standard） 220VAC
Medium temperature	A…… B…… C……	-40℃～+100℃ -40℃～+200℃ -40℃～+350℃
Signal output	0……	Frequency pulse

	1····· 2····· 3····· 4·····	4-20 MA RS232 communication RS485 communication Hart protocol
Explosion-proof type	B····· ·····	flameproof ordinary

Selection for

SFM -F-D50-L-24D-A- 1