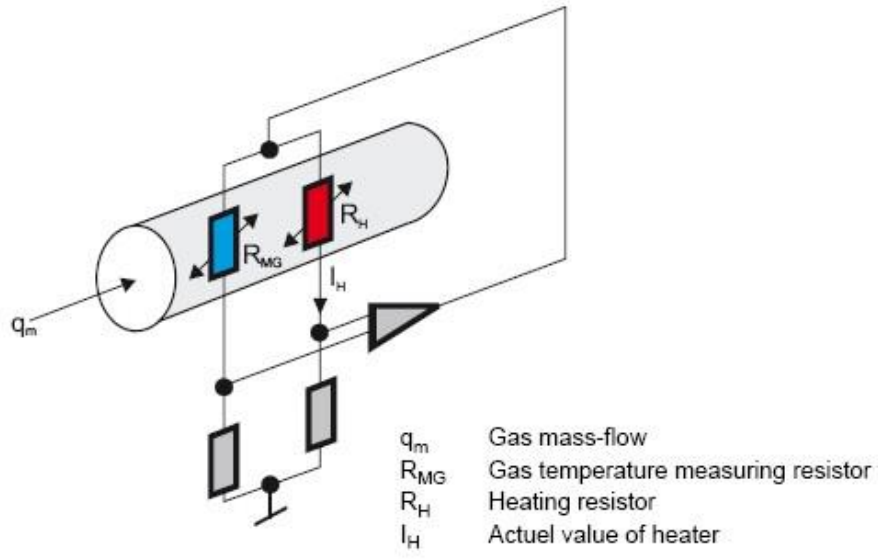
מד זרימה לגז SCH CF600

Brief Introduction

SCH CF600 Series Thermal Mass Flowmeter is the latest thermal mass technology with more rugged design to adapt to harsh industrial applications. It implements sensor filming technology and high sensitivity sensors to ensure a stable measurement at very low flow rate down to 0.3Nm/s. The standard insertion model can fit in pipe line from DN25~DN500, extended model can fit in smaller pipe down to DN25 and larger pipe up to DN 2000. The circuit board and a dual-line LCD display provide user with most powerful and friendly operating interface. The circuit board technology also ensures the product to give stable and accurate measurement and reliable output.

SCH CF600 Series Thermal Mass Flowmeter measures the gas mass flow base on thermal diffusion theory. It has two filmed RTDs as its sensors, one of which sense the velocity of the gas flow (RH) and the other one will detect the temperature shift of the gas flow (RMG). When the two RTD are in the gas flow ,the RH will be heated while the RMG will sense the temperature changing of the gas flow. More heat will be taken away as the velocity of the gas flow increasing, so the temperature on RH will decline.



According to King's law, the heating power P, the temperature difference ΔT (TRH-TRMG) and the mass flow rate are mathematical related. P/△T=K1+K2 f(Q)K3 , the K1、K2、K3 are constants related to the properties of the gas. The flow meter is designed base on constant power measuring method, thus the RTD is heated in a consistent power and

will be more durable and stable. That is why the flow meter has less problem of zero-off which may be caused by a function failure of RTD due to over-heated in long term.

Product features

1) 100:1 turn down ratio in 5 ranges: 0.3~30Nm/s, 0.6Nm/s～60 Nm/s, 0.9~90Nm/s, 1.2~120Nm/s, or 1.5~~150Nm/s can also been expended to a 200:1 turn down ratio
2) No pressure loss, suitable for pipe in any shape with known sectional area 3) For the insertion type, installation and maintenance can be finished on line 4) Measure the mass flow and standard flow directly.
5) Patent protected mathematical model for treatment of flow with impurity of water, is suitable for the special working environment of gas drainage
6) High accuracy data acquisition circuit to ensure outstanding repeatability and accuracy of the flow meter.
7) Electrical structure of total isolation to ensure a excellent EMC properties and avoid the interference from outside
8) High efficiency design of power supply, the total power consumption is only 60mA@24VDC
9) 16V~32V wide voltage range input to fit in all electricity environment
10) Self-protection design of Zener safety barrier inside
11) Metric Unit display and Metric/British unit selectable
12) RamTron F-RAM for permanent storage of date
13) Password function makes device management easier
14) Self-diagnose function makes trouble shooting easier
15) Ex-proof version optional
16) Bluetooth communication for reading, setting and diagnosis

Process connection

The SCH CF600 Series Thermal Flow meter has two different installation types, one is insertion and the other one is in-line type.

The insertion type can be installed and maintained on line. To install it, you have to weld and install a base with screw thread outside on the pipe and install a 1 inch ball valve on the base. Then drill a hole of 22mm diameter on the pipe with a special tool and install the flow meter on the pipe through the hole. The position and depth of how the sensor is fixed have already been set before delivery.

The fitting in diameter of pipe for insertion type: DN25～1200mm (Please make sure to let us know if you need it for larger diameter)

Standard insertion type.		Insertion type with ball valve Install/remove the meter without stopping the flow.	
Flanged insertion type For applications with pressure higher than 1.6Mpa		Flanged insertion type For applications with pressure higher than 1.6Mpa. Install/remove the meter without stopping the flow.	

The In-line type is delivered along with a pipe

which has a same inner diameter as the pipe in field. Is should be installed through flange or screw thread. The flanges meet GB/T9119-2000 standard（or ANSI B16.5 or DIN or JIS standard）. The in-line type can fit in pipe with diameter from DN25mm to DN300mm. Or customer can simply choose to use a 3-way pipe to replace the flanged body .

Special designs

To meet some special requirement on actual applications, we have made some improvement on the structures, which make it easier to be used.

1) Anti-ejection design

In some high pressure applications, there is a risk that when the pressure is too high, the nut sleeve will fail or be loosed unintentional, and the flow meter will be ejected out and cause damage or injury. On our insertion thermal mass flow meter, when the customer need to used it in a high pressure application, the sensor base is wider than the nut sleeve. So as long as the sleeve is still fixed on pipe with thread, the meter will not be totally ejected out. Please reference to below picture

2) Ball valve mounting

When users want to replace or re-calibration or for any reason want to remove the flow meter while do not want to stop the flow , our ball valve mounting can help. Once the meter is installed with a customized ball valve, user can remove the meter away while still keep the pipeline sealed with the ball valve.

This design should only be used when it is absolute necessary and the fluid is not explosive or hazard.

Specification

	Insertion type	In-line type
Media Compatibility	Air, Nitrogen,O2,CO2,Argon,CH4, Natural gas, biogas, and almost all dry and clean air	
Pipe diameter	DN25~2000mm	DN25~300mm
Flow velocity range	0.3~30Nm/s or 0.6~60Nm/s or 0.9~90Nm/s or 1.2~120Nm/s or 1.5~150Nm/s	
Accuracy	1.5% RD ±0.5% FS	
Temperature of medium	Standard: －40~+150°c -40~+250°C/-40~+450°C high temperature for option	
Pressure of medium	1.6MPa	6.3Mpa
Power supply	AC85～264V or DC16～32V	
Response time	1 second	
Output	Frequency and 4~20mA as standard	
Communication	RS~485+Bluetooth as standard , 4~20mA@HART as optional	
Date displayed	Mass flow, Volume flow in normal condition,Total flow	
Ingress protection grade	IP65 (GB China)	
Ex-proof	Ex d II C T3 Gb (NEPSI) (Optional)	

Model	Basic Model	SCH CF600	D	N	1	T	1	1	Q	C	8	1
Process Connection	Flanged in-line		F									
	Insertion (NPT 1")		C									
	Insertion (NPT 1")（with anti-ejection design）		D									
	Insertion (with flange)		G									
Medium temp range	＜150°C			N								
	＜250°C			Q								
	＜450°C (please select remote display also)			H								
Probe Length	290mm (DN25~DN150)				1							
	440mm (DN25~DN500)				2							
	690mm(DN25~DN1000)				3							
	1000mm(DN25~DN1500)				4							
	1500mm(DN25~DN2200)				5							
Transmitter	Integral					T						
	Remote					R						

Material	OCr18Ni9(304)						1					
	316						2					
Pressure Rating	1.6 Mpa							1				
	2.5 Mpa (flanged connection only)							2				
	4.0 Mpa(flanged connection only)							3				
	6.3 Mpa(flanged connection only)							4				
Flange Standard	JIS								A			
	GB China								B			
	ANSI								C			
	Q(insertion type)								Q			
Enclosure	blue enclosure									C		
Transmitte	pulse/frequency + 4~20mA@HART + Bluetooth										7	
	pulse/frequency + 4~20mA + RS485 + Bluetooth										8	
Power supply	13.5~42VDC											1
	85~265VAC 50/60Hz											2
Pipe size	please use 3 digit pipe size, such as DN50=050, DN300=300											

1) Measurement range

Standard: 0.6~60 Nm/s

Option 1: 0.3~30 Nm/s

Option 2: 0.9~90 Nm/s

Option 3: 1.2~120 Nm/s

Option 3: 1..5~150 Nm/s

2) Accessories available

Anti-ejection design

Ball valve

Hot taping driller (for option)

Hot taping holder (for option)

Degreasing (for option)

Pipe size (mm)	Pipe size (inch)	Option 1 (0.3~30 Nm/s)		**Standard** (0.6~60 Nm/s)		Option 2 (0.9~90 Nm/s)		Option 3 (1.2~120 Nm/s)	
		Min (Nm3/hr)	Max (Nm3/hr)	Min (Nm3/hr)	Max (Nm3/hr)	Min (Nm3/hr)	Max (Nm3/hr)	Min (Nm3/hr)	Max (Nm3/hr)
25 mm	1“	0.53	53	1.05	105.9	1.58	158.8	2.11	211.8
32 mm	1 1/4"	0.87	86.7	1.73	173.5	2.6	260.3	3.47	347.1
40 mm	1 1/2"	1.36	135.6	2.71	271.1	4.06	406.7	5.42	542.3
50 mm	2"	2.12	211.9	4.23	423.7	6.35	635.5	8.47	847.4
65 mm	2 1/2"	3.58	358.1	7.1	716.1	10.7	1074.1	14.3	1432.2
80 mm	3"	5.42	542.3	10.8	1084.7	16.2	1627.1	21.6	2169.4
100 mm	4"	8.47	847.5	16.9	1694.9	25.4	2542.3	33.8	3389.8
125 mm	5"	13.2	1324.2	26.4	2648.3	39.7	3972.4	52.9	5296.6
150 mm	6"	19.1	1906.8	38.1	3813.5	57.2	5720.3	76.2	7627.1
200 mm	8"	33.9	3389.8	67.7	6779.6	101.6	10169.4	135.5	13559.3