Model TFS2200
Thermal Gas Flow Modules for Residential Smart Gas Metering

Description

The model TFS2200 thermal gas flow modules are specially developed for residential smart gas meter applications.

Aimed at the smart gas meter application, both a temperature sensor and a gas-recognition sensor are integrated in this module. The temperature sensor signal can be used for temperature compensation on flow data, while the gas-recognition sensor can be used to identify whether the flow medium is air or natural gas.

The module contains a thermal mass flow sensor made by MEMS process, which is the core of the TFS2200.

Thanks to MEMS facility, this model has advantages of low power consumption and wide measuring range with high accuracy, and are benefit a compact design. As there is no moving part in the TFS2200, the module forms a solid state sensor system with excellent stability and reliability.

To prevent any possible influence due to metal particles contained in gas flow, the flow channel is specially designed and a protective layer is applied to the surface of the flow sensor.

In case of high-volume orders, the housing of TFS2200 modules can be customized for the best integration into customer gas meters.

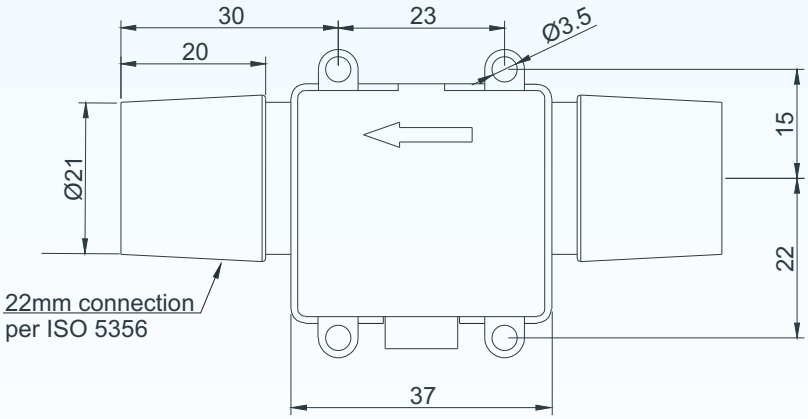
Features

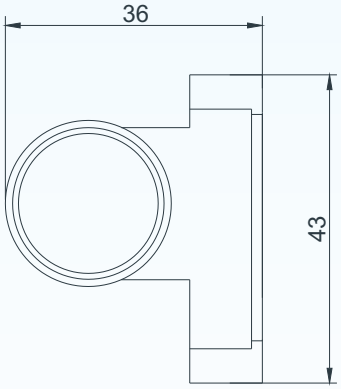
- integrated temperature and gas-recognition sensors
- low power consumption
- high accuracy: up to ±1.5%rdg
- wide range: 0~6m^3/h

Applications

- smart gas metering

Dimensions





Note: All dimensions are in mm.

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Technical Data

Parameters		Units	Specifications	Notes
flow medium			natural gas, air	1
measuring range		m^3/h	0~6	2 & 3
ultimate flow rate		m^3/h	12	
ultimate pressure of flow medium		bar	3	
pressure drop		mbar	1 max. at $6m^3/h$	
diagnosis signal of no-flow		Vdc	0.5±0.25	
output signal		Vdc	0.05~2.95	
digital output option			SPI, I^2C	
accuracy		%rdg	±3 (for flow rate < $0.6m^3/h$), ±1.5 (for flow rate ≥ $0.6m^3/h$)	4
temperature sensor	temperature range	°C	-20 ~ +60	
	sensitivity	mV/°C	0.5	
	output reference @20°C	V	0.2	
	accuracy of temp. sensor	°C	±0.5	
gas-recognition sensor output		Vdc	1.2 in case of air, 1.5 in case of CH_4	
supply voltage (Vs)		Vdc	3.3 (typical), or any voltage in range of 3.1, ..., 5.5Vdc	
power consumption in continuous mode		mA	5.5	
power consumption in sleep mode		μA	10 max.	
response time		ms	40 typical, 100 max.	5
voltage to control flow and temp sensor		Vdc	switch on: 0.9, ..., Vs; switch off: 0, ..., 0.4	
voltage to control gas sensor		Vdc	switch on: 0.9, ..., Vs; switch off: 0, ..., 0.4	
storage temperature range		°C	-25 ~ +70	
operating temperature range		°C	-20 ~ +60	
temp. coeff. of span of flow measurement		%rdg/°C	-0.19 (at $0.6m^3/h$), -0.13 (at $6m^3/h$)	
mechanical interface			22mm diameter connection per ISO 5356	
electrical interface			9-pin plug-in connector (standard), flying wires of 200mm length	
housing material			engineering plastic in black	

General test conditions:

flow medium: standard air of pressure 760mm of mercury column;
temperature: 20°C;
humidity: 50%RH;
excitation voltage: 3.3Vdc.

Notes:
1. For other media, consult BCM SENSOR.
2. Minimum measuring flow rate: $0.016m^3/h$.
3. Customized ranges available on request. Consult BCM SENSOR.
4. “rdg” refers to “reading”.
5. The response time is measured from the wake-up moment in the sleep mode to the moment when the output rises to 90% of maximum value. 40ms is the typical response time when the sleep time is less than 2 seconds. This typical response time may increase to 70ms in case of longer sleep time.

The listed specifications and dimensions are subject to change without prior notice.

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Ordering Information

position (pos.) 1: model	pos. 2: measuring range	pos. 3: output signal	pos. 4: accuracy	pos. 5: mechanical interface	pos. 6: electrical interface	pos. 7: customized specifications
TFS2200						
	0/6m^3/h					
		0.05/2.95V (standard)				
		SPI				
		I^2C				
			3%rdg			
			1.5%rdg			
				22mmConnection(ISO 5356)		
				Customized connection available on request.		
					9P: 9-pin plug-in connector (standard)	
					FW: 200mm flying wires	
						"(*)" is necessary only if any customized parameter is required, otherwise it is neglectable.
pos.1	**pos. 2**	**pos. 3**	**pos. 4**	**pos. 5**	**pos. 6**	**pos. 7**

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Examples of Ordering Code

- standard sensor:

  TFS2200-0/6m^3/h-0.05/2.95V-1.5%rdg-22mmConnection(ISO 5356)-9P

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