CAFS4000

Consensic

Data Sheet

MEMS Gas Flow Meters

Rev0.2

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DAT-0026

Sold in North America By:
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Usage Notice

1、 Please read the instructions carefully before using the product.
2、 The product is best used in a clean gas environment; it is not suitable for use in environments with large amounts of dust, oil and multiphase flow; for use in environments with large amounts of water vapor, please contact the manufacturer beforehand.
3、 The product is suitable for gas measurement, monitoring and control in automotive, industrial, commercial, equipment and other industries. Use in other unsuitable environments should be strictly controlled.
4、 When using or applying this product, the relevant operating specifications and operator safety precautions and procedures should be strictly followed.
5、 Wuxi Consensic Electronic Technology Co., Ltd. and its subsidiaries, subsidiaries, offices and other affiliates will not be liable for any damage caused by improper use of this product. Other matters are subject to the sales contract.

Precautions ⚠

1. The product can only work normally in the use environment defined in this manual.
2. Pay attention to the gas flow direction sign during installation. Connection and leak detection should be carried out according to the corresponding regulations.
3. During the use of the product, online installation of pipes, cleaning pipes or other operations that may introduce a large amount of impurities may cause damage to the product.
4. If there is water in the medium, or if it is immersed in water, the sensor's sensitive characteristics may be degraded or damaged.
5. The reverse connection between the positive and negative terminals of the power supply will cause the internal circuit of the sensor to burn out, thus affecting the use.

Company Overview

Wuxi Consensic Electronic Technology Co., Ltd. (Consensic, Inc .) Is an emerging MEMS design and manufacturing of American-owned enterprises. Founded in 2009, the company is headquartered in southern San Francisco, California, USA, and has a management team with extensive sensor and semiconductor experience. set up. We are committed to continuous innovation and market-competitive sensor manufacturing, offering more choices for micro-packages for advanced integrated systems. Through continuous technological innovation, we provide our customers with more competitive MEMS products.

Wuxi Consensic Electronic Technology Co., Ltd. has core capabilities in MEMS design, manufacturing and testing to provide customers with high precision and highly reliable MEMS products and solutions. From silicon to test design quality and reliability, we strive to exceed customer requirements. Company creation at the beginning of the company, we have been in close contact with our customers and partners, and we have created a success together with the win-win concept of hand in hand.

Product Description

The CAFS4000 series is fabricated using a micro-electromechanical system (MEMS) flow sensor chip. It is suitable for the measurement of clean and relatively dry gases for various purposes. It realizes the digitization, intelligence and high safety of the equipment, and has the innovation of traditional industries. Function and improvement; a wide range of flow ranges meet the flow measurement requirements of different equipment in the industry. High sensitivity, high reliability, high stability and low cost performance characteristics can promote the industry to develop energy-saving and intelligent.

The CAFS4000 series is based on a MEMS flow sensing unit, high-precision digital processing and calibration circuit (MCU), integrated high-resolution delta-sigma A/D converter and logic with internal calibration and MCU processor. The sensing signal is effectively collected in real time, and the accurate flow signal is obtained, and the corresponding compensation algorithm is processed internally, so that no external calibration compensation is required, and high-precision flow output can be ensured; the friendly

digital output communication mode can be used by the user. It is very convenient to get the corresponding data information; the product application range is very broad。

Features

- Wide flow range 0-500SLPM
- High precision (1.5% F.S accuracy)
- Linear output and temperature compensation
- Maintain long-term stability with minimal zero drift
- Solid-state sensing core (no surface void or fragile membrane), anti-blocking and pressure shock
- Analog output (1 to 5 V) (I2C output is also available)
- Fast response time (20ms response time)

Applications

- Ventilator
- oxygen machine
- Gas mask and respirator
- Sprayer
- Continuous positive airway pressure (CPAP) device
- Anesthesia delivery
- Leak detection
- spectrometer
- Mass flow controller
- Environmental climate control
- Fuel cell control

Maximum rating

- Working temperature: -25 ° C to 85 ° C
- Storage temperature: -40 ° C to 90 ° C

- Humidity: 0~100%RH*
- Impact resistant 100 g
- The sensor is resistant to condensation*

Electrical characteristics			
Test conditions: VIN = 12 ± 0.01 VDC, Ta = 25 ° C. Relative humidity: 40% <relative humidity <60% Maximum operating temperature range -25°C to +85°C			
	Flow range(1)	**Unit (2)**	**Maximum flow rate (m/s)**
CAFS4003V	0-12	SLM	0.527
CAFS4004V	0-20	SLM	0.877
CAFS4005V	0-35	SLM	1.535
CAFS4100V	0-50	SLM	2.193
CAFS4101V	0-100	SLM	4.387
CAFS4102V	0-150	SLM	6.58
CAFS4103V	0-200	SLM	8.773
CAFS4104V	0-300	SLM	13.16
CAFS4105V	0-500	SLM	35.5

Specifications	Minimum	Default	Maximum	Unit
Supply voltage	8	12	24	VDC
Supply current	30		20	mA
Analog voltage output (3)	1		5	VDC
Zero voltage	0.95	1	1.05	VDC
Zero drift	—	—	0.2	%F.S
Resolution (4)	—	0.1	—	%F.S
load	—	100	—	KΩ
Accuracy	—	1.5	2	%F.S
Response time	—	20	30	mSec
Overall material	Silicon carbide, epoxy resin, polyphenylene sulfide, FR4, silicon as a seal			

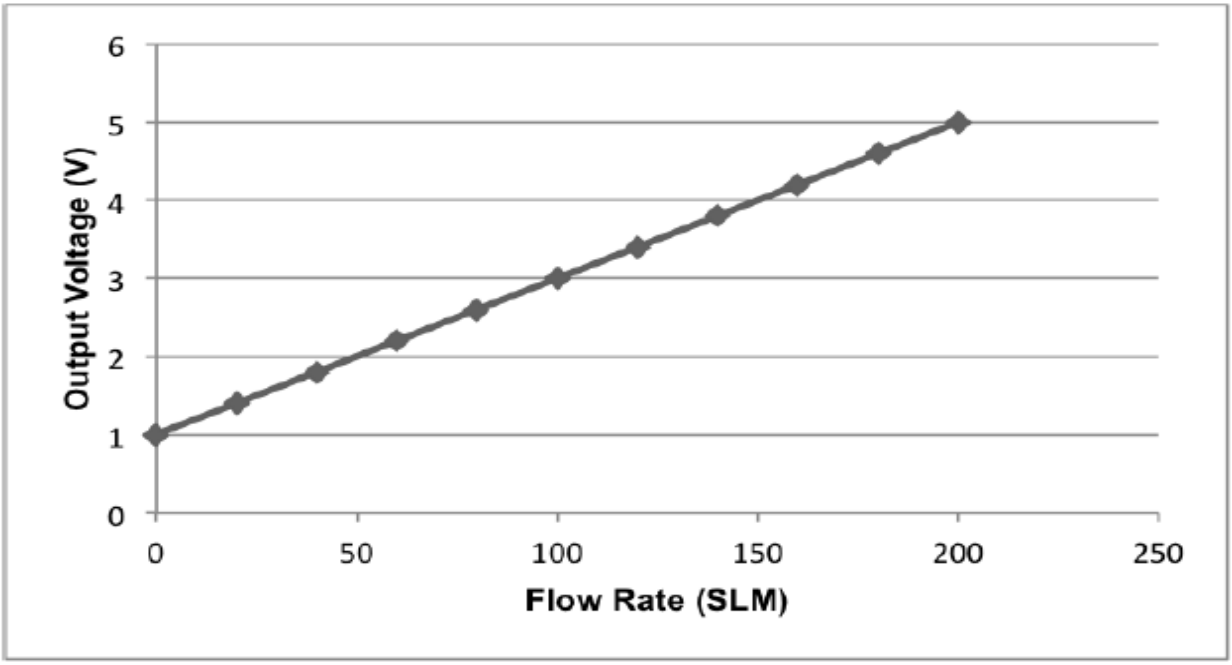
1. Customizable range between 10SLM and 500SLM
2. SLM: Standard liters per minute. Standard conditions: 0 ° C and 1 atmosphere
3. In addition, the two-way airflow test can be customized, and the analog output is correspondingly changed. F(min)—F(max) corresponds to 1-5V output, and 0 flow corresponds to 3V;
4. Includes temperature drift and linearity error

Linear Output

1. The unidirectional airflow mode: (calculation formula)

Flow = [(VOUT -1 V) / 4 V] × full scale flow

For example: CAFS4103V has a full-scale flow of 200 SLM. When the output voltage is read at 2.5V, the instantaneous flow rate is [(2.5V-1V) / 4V × 200 SLM] = 75 SLM

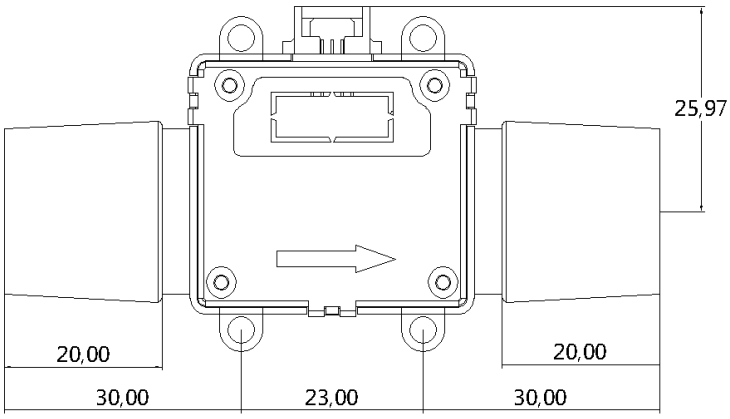


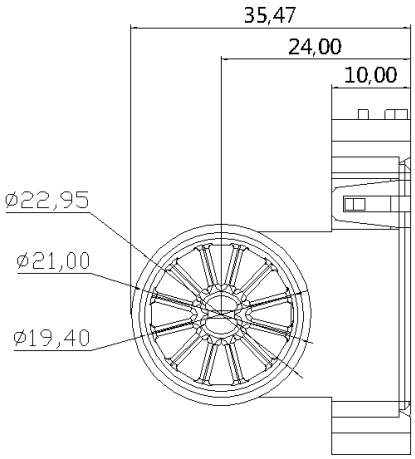
2. Two-way airflow mode: (calculation formula)

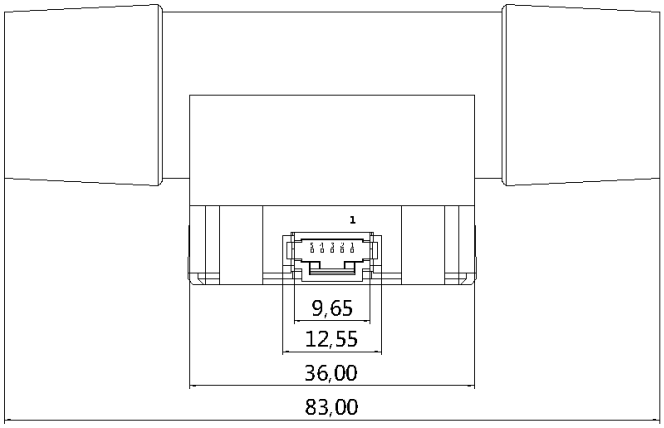
Forward flow = [(VOUT -3 V)/2 V] × full scale flow

Reverse flow = [(3 V- VOUT)/2 V] × full scale flow

Shell Size







PIN-out :

#	Function	Wire Color
1	SDA	Blue
2	SCL	Green
3	GND	Black
4	VCC	Red
5	Vout	Yellow

Note 1: The connector can be matched with a connecting line according to customer requirements.

Customer Support

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Disclaimer

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The "standard parameters" provided in this datasheet will vary in different applications, and actual performance will change over time. Customers must verify all operational parameters in their applications.

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The customer assumes all responsibility and obligations for proper and safe loading and unloading of the goods. The customer should take appropriate precautions against electrostatic discharge. Please also note that this product is not subject to regulatory compliance or agency registration (FCC, UL, CE, etc.).

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