

DESCRIPTION

BAFS3000 series mass gas flow sensor is made of micro-electro-mechanical system (MEMS) flow sensor chip, which is suitable for clean, relatively dry, low-flow gas measurement and process control for various purposes. The unique packaging technology enables the product to meet different ranges of flow measurement, ensuring high sensitivity, high reliability, high stability and low cost. Accurate flow signal is obtained, and the corresponding compensation algorithm is processed internally, so there is no need to do any external calibration compensation to ensure high-precision flow output;

CHARACTERISTICS

- High accuracy (1.5% F.S accuracy)
- Linear output and no temperature compensation required
- Long-term stability with minimal zero drift
- Solid-state sensing core (no surface voids or fragile membranes), resistant to clogging and pressure shocks
- Fast response time (1ms response time)
- Wide flow range 0sccm -2000sccm
- Able to adapt to relatively humid gas measurement

PERFORMANCE

Parameter	BAFS3000				
Test Conditions	VIN=12 ± 0.01VDC , Ta=25				
Relative humidity	40%<relative humidity<60%				
Temperature range	-25 ~+85				
Specification	Minimum	Normal value	Maximum	Unit	Remark
Flow range	0	-	2500	sccm	customizable
Supply voltage	8	12	24	V	
Current	20		15	mA	
Maximum voltage output	4.94	5	5.02	V	
Zero voltage output	0.98	1	1.02		
Precision		1.5	2	%FS	
Pressure resistance		0.3		MPa	customizable
Resolution		0.1		%	Full scale
Response time	10	65	200	ms	
Zero drift		0.2		%Year	Full scale
temperature drift			4	%	0 ~50
Standard condition	Air, 0 , 101.325kPa				
Overall material	Silicon carbide, epoxy, polyphenylene sulfide, FR4, silicon as sealing material				

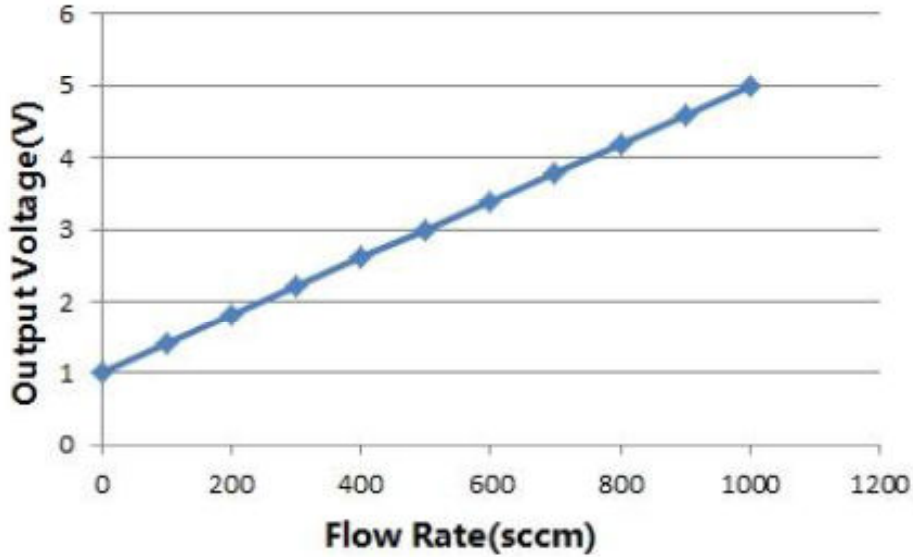
APPLICATION

- Oxygen concentrators; respirators and respirators; nebulizers; continuous positive airway pressure (CPAP) equipment
- Anesthesia delivery; leak detection; spectrometer; mass flow controller; communication system; environmental climate control

LINEAR OUTPUT

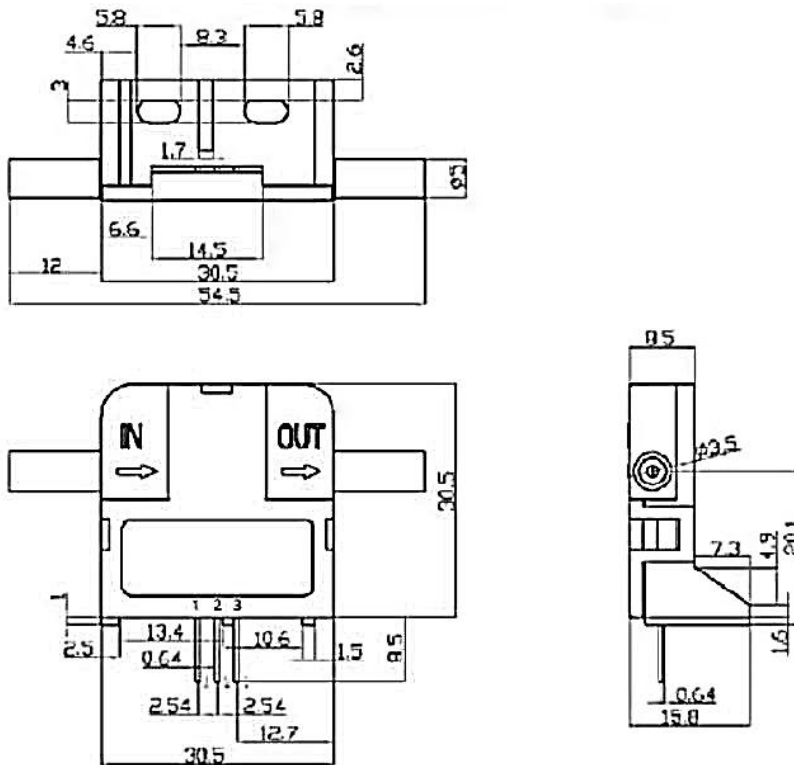
$$\text{Flow} = [(V_{\text{OUT}} - 1 \text{ V}) / 4 \text{ V}] \times \text{full scale flow}$$

For example: BAFS3000 has a full-scale flow rate of 1000sccm. When the output voltage is read at 2.5V, the instantaneous flow rate is $[(2.5\text{V}-1\text{V})/4\text{V} \times 1000\text{sccm}]=375\text{sccm}$

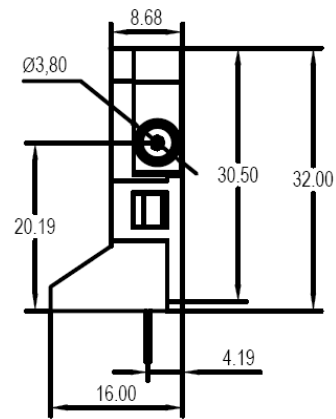
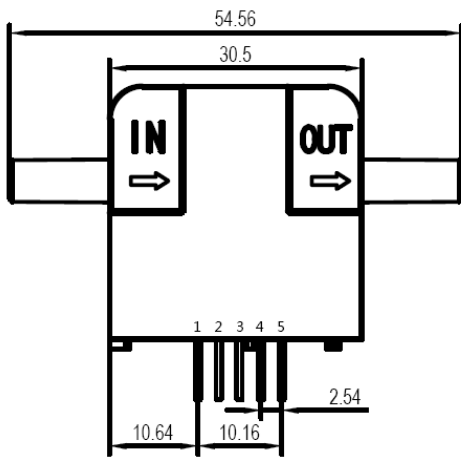
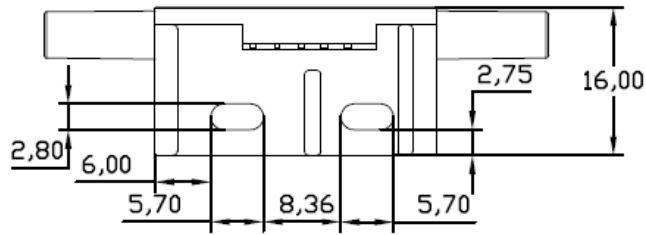


DIMENSIONS

1. 3-pin output mode (analog voltage output)



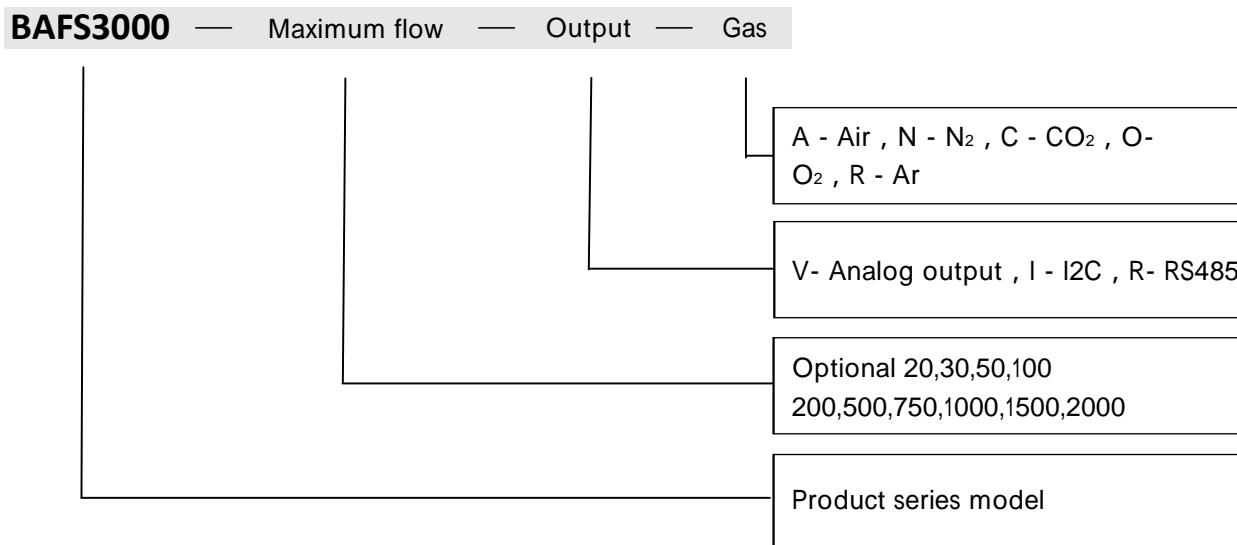
2. 5-pin output mode (analog voltage output and I2C digital communication and RS485 output)



OUTPUT LEAD DEFINITION

Number	3-pin output method	5-pin output method
1	NB	SDA
2	Vout	Vout
3	Vin	Vin
4	GND	GND
5	NB	SBL

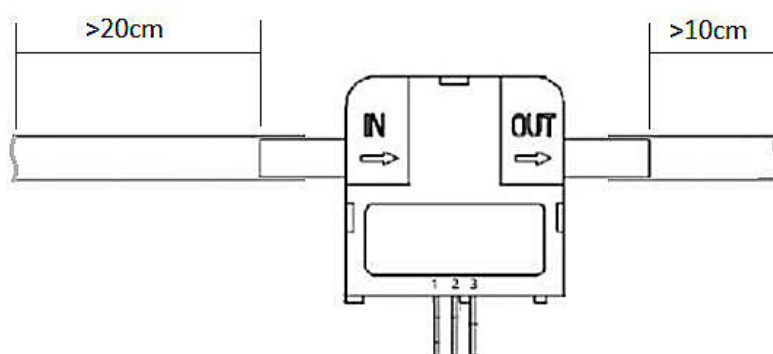
NOMENCLATURE



- Note:**
- In the output item, the default output of the sensor is V, and I is an option;
 - In the maximum flow item, the unit is sccm, for example: 100 means 100sccm;

INSTALLATION

Install the sensor on the pipeline, ensure that the front straight pipe section is greater than 20cm, and the rear straight pipe section is greater than 10cm, and ensure that the straight pipe section and the sensor are installed concentrically, and the sensor and the straight pipe section are fixed reliably, as shown in the following figure:



Note that the direction of airflow during installation is consistent with the direction indicated by the airflow of the sensor.

After the sensor lead-out line is correctly connected according to the definition, turn on the power and start working.

SAFETY AND MAINTENANCE

When the sensor is used for the measurement of explosive gas and harmful gas, it must strictly follow the requirements and restrictions of the product manual. Strong corrosive gas and chloride gas may affect the correct measurement of the sensor and may cause damage to the sensor.

The product has been sealed and tested for leakage before leaving the factory. When used under high pressure, it must comply with the pressure limit on the product manual, otherwise it may lead to leakage and safety problems.

INSPECTION

When unpacking, check the integrity of the external packaging, proofread the quantity and specifications of the items in the box according to the packing list, and check their integrity. The random documents include: packing and unpacking and inspection safety and maintenance sheet, certificate of conformity, verification certificate, instruction manual, product quality tracking card.

NOTICE

- The product is best used in the environment of clean gas; not suitable for the environment with a lot of dust, oil pollution and multiphase flow; for the environment with a lot of water vapor, please contact the manufacturer in advance.
- Products are suitable for gas measurement, monitoring and control in automotive, industrial, commercial, equipment and other industries. Use in other unsuitable environments should be strictly controlled.
- When using or applying this product, you should strictly follow the relevant operating specifications and safety precautions and regulations for operators.

PRECAUTIONS

- The product can only work properly in the usage environment defined in this manual.
- When installing, pay attention to the gas flow direction sign, and the connection and leak detection should be carried out according to the corresponding regulations.
- During the use of the product, online installation of pipelines, cleaning of pipelines or other operations that may introduce a large amount of impurities may cause damage to the product.
- If there is water in the medium, or immersed in water, the sensitive characteristics of the sensor may be degraded or damaged.
- The reverse connection of the positive and negative poles of the power supply will cause the internal circuit of the sensor to burn out, thus affecting the use.

DISCLAIMER

Warning

LIFE OR PROPERTY RISK

- Please ensure that this product has been designed as part of whole system and already considered related risks, make sure the product has the correct ratings and is designed based on the entire system. It must not be used when applications related to serious life or property damage risks.

Failure to follow this instruction can result in death or serious injury.

Warning

PERSONAL INJURY

- DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to follow this instruction can result in death or serious injury.

Warning

MISUSE OF DOCUMENTATION

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

Failure to follow this instruction can result in death or serious injury.

Warranty/Remedy

Banning warrants goods of its manufacture as being free of defective materials and faulty workmanship during the applicable warranty period. Banning's standard product warranty applies unless agreed to otherwise by Banning in writing; please refer to your order acknowledgment or consult your local sales office for specific warranty details. If warranted goods are returned to Banning during the period of coverage, Banning will repair or replace, at its option, without charge those items that Banning, in its sole discretion, finds defective. The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Banning be liable for consequential special, or indirect damages.

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