

ДАТЧИКИ МАССОВОГО РАСХОДА

ТЕХ. ХАРАКТЕРИСТИКИ

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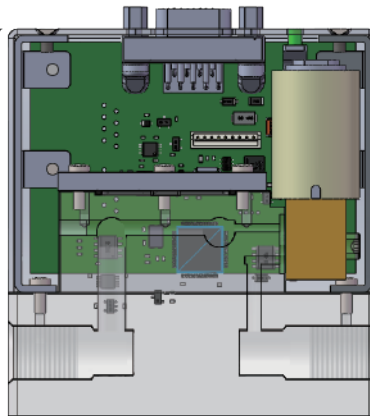
Ecnomical Gas Mass Flow Controller

MFC-E (Mass Flow Controller) series products are specially developed for gas analyzer, mass spectrometer, gas distributor and other industries. The product mainly constructed with high accuracy flow sensor, high-end electromagnetic proportional valve, 316 L stainless steel gas seat. MFC-E series are with high accuracy, quick reaction and outstanding stability. Also easy operation, no need for temperature compensation, insensitive to pressure. Input and control signal includes: 0-5 V analog signal and R S 4 8 5 communication formula.



Features

- Temperature and pressure insensitivity
- Superior zero stability
- Superfast response speed
- Good repeatability and reproducibility
- Multiple signal output pattern
- High-end proportional solenoid valves

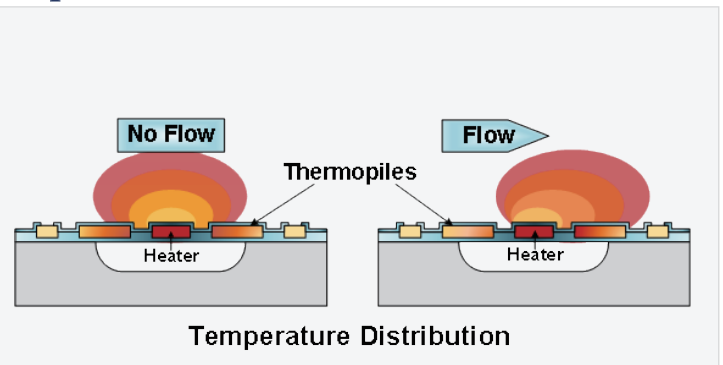


Applications

- gas distributor
- vaccum coating
- food and drug
- gas analyser
- operation processing
- burning control

Working principle of MEMS flow sensor chip

Developed based on Thomas' theory "Heat absorption or release of a gas is proportional to its mass flow". When there is no gas flow, the temperature field is symmetrically distributed with Heater as the center; when there is gas flow, the temperature field distribution shifts, which leads to a temperature difference between upstream and downstream thermopiles. By measuring the temperature difference, the mass flow through the chip surface can be calculated.



Specifications

| Parameters | |
|----------------------------|----------------------------------------------------------------------------------------------------------|
| Requirements | Clean, dry and non-corrosive |
| Gas type | Air, N ₂ , O ₂ , CO ₂ , He, H ₂ , CH ₄ , Ar, etc. |
| Full scale | (0~20, 50, 100, 200, 500) SCCM (0~1, 2, 5, 10) SLM |
| Accuracy | 0.8%F.S. or 1.0%S.P. which one is bigger |
| Control range | 100:1 |
| Response time | ≤ 0.5s |
| Repeatability | ±0.2%S.P. |
| Leakage rate | 1 × 10 ⁻¹⁰ Pa m ³ /s He |
| Max.withstand pressure | 9.8 bar |
| Environmental requirements | |
| Operating temp. | 0~50 °C |
| Operating Humidity | 10%~90%R.H. (no icing, no frost) |
| Operating pressure | ≥ 2SLM, 0.5~4 bar < 2SLM, 0.5~6 bar |
| Storage temp. | -20~85°C |
| Electric parameters | |
| Power voltage | DC24V, Ripple≤50mV |
| Power consumption | ≤ 2.7W |
| Startup time | ≤ 1 s |

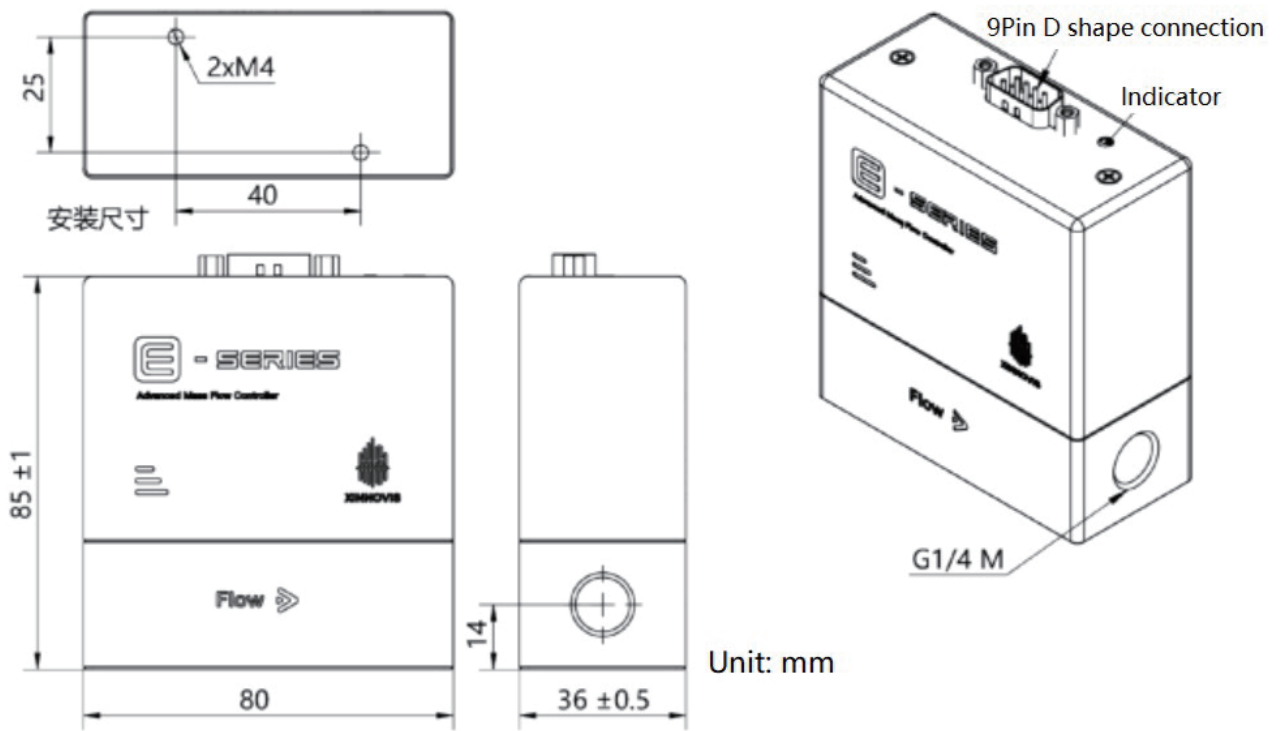
| Communication interface | |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Interface type | D-SUB9 |
| Analog | 0~5V, 4~20mA |
| Digital | RS485、RS232 |
| Digital signal (RS485) | |
| Interface type | D-SUB9 |
| Com. rate | 4800, 9600(Default),14400, 19200, 38400, 56000, 57600, 115200, 115200 128000, 230400, 256000, 460800, 500000 (Can be modified by instruction or upper computer) |
| protocol | RS485 (Modbus-RTU default, Private protocols can be customized) |
| Address | 1(Default)~250 (Can be modified by instruction or upper computer) |
| | |
| Mechanical parameters | |
| Connector | Compressing sleeve: 8mm, 1/4inch, 1/8inch VCR: 1/4 in. Others are optional. |
| Body material | Gas channel: 316L Stainless steel Shell: Aluminum alloy |
| Wetted material | FKM rubber |
| Weight | 0.90kg |

Note

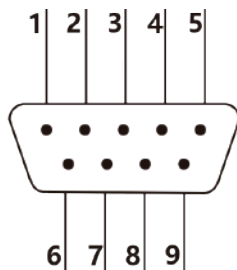
- * Unless otherwise stated, this product is calibrated under the following conditions: N₂, temperature 25 °C, 2 bar pressure difference(inlet 3bar absolute pressure , outlet 1bar absolute pressure), horizontally placed and installed.
- * Recommend to install a straight pipe section of appropriate size at the inlet. Otherwise, the accuracy may be biased.
- * Suggest the interface connector should be as large as possible to avoid extra pressure loss.
- ① The range shown is the optional range of N₂.
- ② %F.S. is the percentage of error value to full range.
- ③ %S.P. is the error value to setting point.
- ④ Response time means the time need to reach to the setting point within ±2%.
- ⑤ Working pressure is the pressure difference between inlet and outlet.

Dimensions

Remark: the products dimension will be different according to the flow range



Communication



D-SUB9 instrument pin sequence number

| D-SUB9 instrument pin sequence number | Line sequence definition |
|---------------------------------------|----------------------------------------|
| 1 | analog voltage output(0~5V) |
| 2 | RS485-A |
| 3 | analog voltage input(0~5V) |
| 4 | 0~5V analog field |
| 5 | RS485-B |
| 6 | N.C. |
| 7 | N.C. |
| 8 | power supply field |
| 9 | power supply positive electrode(DC24V) |

Selection Guide

| Code | Gas type (clean, dry, non-corrosive) | |
|------------------|--------------------------------------|----------------------------|
| E-01 | Nitrogen | |
| E-02 | Air | |
| E-03 | Oxygen | |
| E-04 | Carbon dioxide | |
| E-05 | ,Argon, | |
| E-06 | Methane | |
| E-07 | Hydrogen | |
| E-08 | Helium | |
| Example | Code | Flow range |
| E-01-C010 | C010 | 10 sccm |
| | C020 | 20 sccm |
| | C050 | 50 sccm |
| | C100 | 100 sccm |
| | C200 | 200 sccm |
| | C500 | 500 sccm |
| | L001 | 1 slpm |
| | L002 | 2 slpm |
| | L005 | 5 slpm |
| | L010 | 10 slpm |
| | L020 | 20 slpm |
| | Example | Code |
| E-01-C010-DG | DG | RS485 |
| | AM | 0-5V |
| | DM | RS485和0-5V |
| Example | Code | Outside connector type |
| E-01-C010-DG-TM8 | TM8 | 8mm compression fitting |
| | TM6 | 6mm compression fitting |
| | TG1 | 1/8 in.compression fitting |
| | TG2 | 1/4 in.compression fitting |
| | VC4 | 1/4 in.VCR |
| | KC8 | 8mm quick plug |
| | | |

Note: All inside screw thread are in G1/4 and can't accept customization. If you do not need the outside fittings in above table or need other types, please contact us.

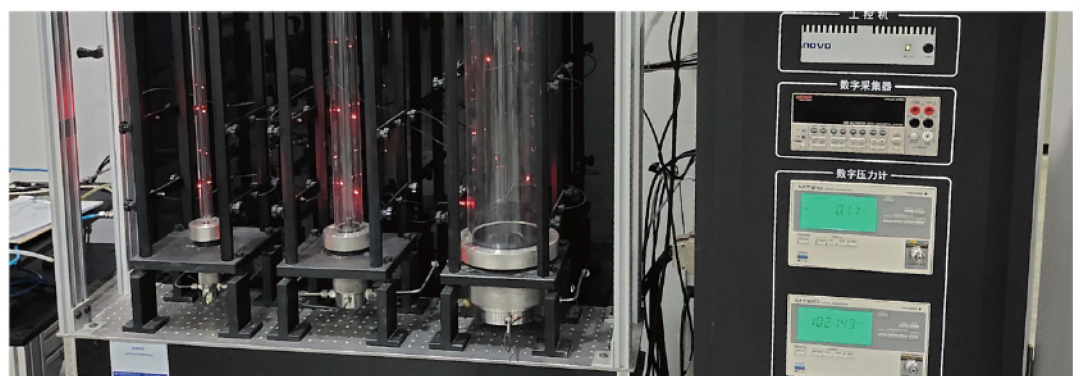
Service

Benefits

- Fast delivery, prestigious pre-sales and after-sales services;
- Tailored product configuration according to environment conditions;
- Economical, help clients to save purchasing and maintenance cost;
- Distinguished stability and long time service life;
- Professional research and development team, which can provide great technical support and guarantee
- Based on the principle of MEMS thermal conduction, the gas flow rate can be measured with high precision, which is not affected by environmental parameters such as temperature and pressure.

Calibration

In the calibration process, we have several high-end equipment, such as piston standard flow device (accuracy $\pm 0.3\%$ S.P.), sonic nozzle standard flow device (accuracy $\pm 0.13\%$ S.P.), Fluke Molbox flow device (accuracy $\pm 0.125\%$ S.P.), they help to ensure product accuracy.



Safety and Warranty

Safety

When products are used for harmful gas or explosive gas, it must be strictly follow the operation instructions or consult with Xinnovis technicians. For the latest information on product applications, please contact with Xinnovis or visit our website. Strong corrosive or fluoride gases may affect the normal operation or even damage of the product. The products have been sealed and underwent leakproof testing before package. The operation under high pressure must follow the limits of the product instructions, otherwise it will cause leakage and safety problems.

Note: Unauthorized alteration or improper operation of the product without Xinnovis permission can cause unforeseen damage, personal injury and other harmful consequences, Xinnovis will not take any responsibility.

Warranty

The product must be installed, operated and maintained strictly in accordance with the proper methods under the normal working conditions described in the specification. Product warranty period, 365 days free warranty from the date of delivery. Products which have been repaired or replaced, the warranty period is 90 days or extension of the original warranty period (whichever is the longer).

Xinnovis Microsystem Technology Co., Ltd (hereinafter referred to as Xinnovis) shall not be liable for any direct or indirect damage and loss caused by installation, disassembly and replacement (but not limited to installation, disassembly and replacement). In order to avoid unnecessary disputes, clients should return their questionable products to Xinnovis. After Xinnovis confirms the problem, it determines the maintenance or replacement. The returning fee and possible risks are at client's expense. Xinnovis undertake the cost and possible risks of returning the product to clients. All sales contracts of Xinnovis confirm that clients automatically accept this warranty and the limited liability of Xinnovis. Only Xinnovis has the right to change, revise warranty conditions or decide not to implement its terms.

Note that warranty clauses do not apply in the following conditions:

- 1) The product has been altered, modified, in an abnormal (or otherwise) environment as specified in the specification and in any other situation which may be considered as abnormal operation;
- 2) not the original product of Xinnovis.

Environmental-friendly Requirements

For packaging box, filling materials, anti-static bags and other materials, please classify them into paper, plastic and other garbage. For items that reach service life, please refer to the relevant national scrapping regulations for electronic and electrical products.

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