PARKARN
INSTRUMENT CO.,LTD

# THERMAL MASS FLOW METERS AND CONTROLLS


**PE SERIES**

## Product Overview

PE series gas mass flow controller is a product with high precision, low temperature drift and high reliability, which is specially developed for gas analyzer, mass spectrometer, gas distributor and other industries.

This product is equipped with industrial-grade MEMS flow sensor chip, high-end electromagnetic proportional valve, 316L stainless steel gas circuit seat, etc.

It has the advantages of high precision, fast response, good stability, temperature and pressure insensitivity, etc. The output and control signals of the product include 0-5V analog signal and RS485 digital communication mode.

The product is assembled, calibrated and packaged in a 1000-class purification room with a temperature of 24 ± 2 °C. In order to ensure the product quality, its accuracy, repeatability and other performance indicators must be inspected twice before delivery.

081-123-2475
www.mit-trade.com

# Product Specifications : PE series gas mass flow controller

| 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 ① | (0-20, 50, 100, 200, 500) sccm<br>(0-1, 2, 5, 10, 20) slm |
| Accuracy | 0.8% F.S. ② or 1.0% S.P. ③<br>(Whichever is Larger) |
| Range ratio | 100:1 |
| Response time ④ | ≤0.5s |
| Repetition accuracy | ±0.2% F.S. |
| Resolution ratio | ≤100sccm, 0.01sccm<br>≤1000sccm>100sccm, 0.1sccm<br>≤5slm>1000sccm, 1sccm<br>>5slm, 10sccm |
| Leakage rate | $<1x10^{-9}$ Pa $m^3$/s He |
| Max.withstand pressure | 9.8bar |
| **Environmental requirements** | |
| Operating temp. | 0-50°C |
| Operating humidity | 10%-90%R.H. (No ice or frost) |
| Operating pressure ⑤ | >2slm, 0.5-4bar<br>≤2slm, 0.5-6bar(Specific range related) |
| Storage temp. | -20-85°C |
| **Electric parameters** | |
| Power voltage | DC24v,Ripple≤50mV |
| Power consumption | ≤2.7W |
| Starting time | ≤1s |
| **Communication interface** | |
| Interface type | D-SUB9 |
| Analog control | 0~5V, 4~20 mA |
| Digital control | RS485 |

| Digital signal (RS485) | |
|---|---|
| Interface type | D-SUB9 |
| Communication rate | 4800, 9600 (default),,<br>14400, 19200, 38400, 56000, 57600, 115200, 128000, 230400, 256000, 460800, 500000<br>(Can be modified by instructions or host computer) |
| Protocol | Modbus-RTU |
| Address | 1 (Default) ~250<br>(Can be modified by instructions or host computer) |
| **Mechanical parameters** | |
| Connector type | Card sleeve: 1/4inch VCR: 1/4inch Others are optional. |
| Gas contact material | 316L stainless steel, FKM rubber, Si, SiO2, SiO2·xH2O |
| Main material | Foundation: Aviation aluminum alloy<br>Shell: Aluminum alloy |
| Sealing material | FKM rubber |
| Weight | 0.90kg |

**Remarks**

* Unless otherwise stated, this product is calibrated under the following conditions: N2, temperature 25 °C, 2.5 bar differential pressure (inlet 3.5 bar absolute pressure, outlet 1 bar absolute pressure), horizontally placed and installed.

* Recommend to install a straight pipe section with proper size at the inlet end, otherwise the accuracy may be deviated.

* Recommend to match the largest possible joint at the inlet and outlet ends to avoid causing additional pressure loss.

① The range shown is optional for N2.

② %F.S. is the percentage of error to full range.

③ %S.P. is the percentage of error to set value.

④ Response time refers to the time required to reach the set value within ± 2%.

⑤ Working pressure refers to the differential pressure between air inlet and air outlet (1 bar absolute pressure), for more details, pls contact us.

# Product Dimensions : PE series gas mass flow controller

The external dimensions of PE series products are shown in the figure below. The inlet and outlet of PE series products adopt G1/4 internal thread.

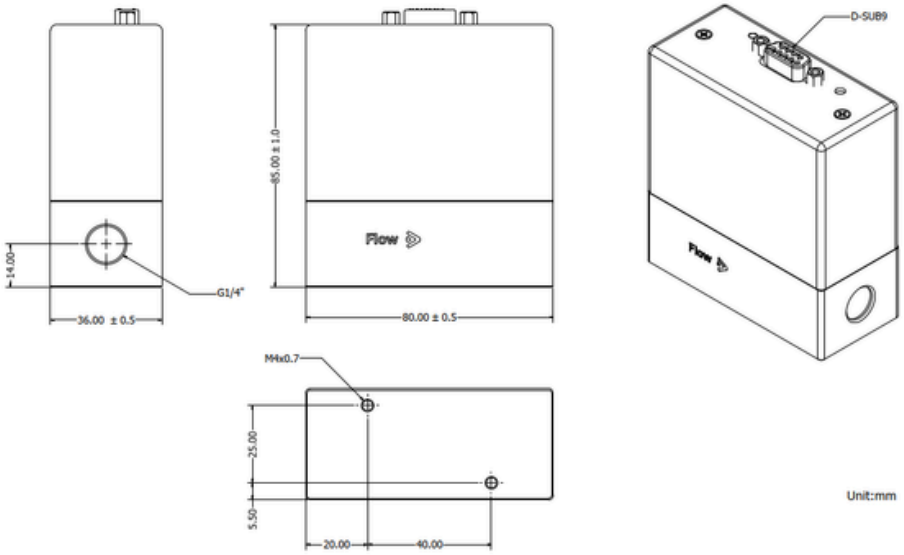


**Figure External dimensions of PE series products**

PE series products adopt switching power supply mode and support DC ± 24V. D-SUB9 (line sequence arrangement is shown in the table) is used as the electrical connector by default. It supports 0~5V analog communication mode and RS485 serial communication mode (Modbus-RTU is used by default). Customers can customize the electrical connection mode according to actual needs.

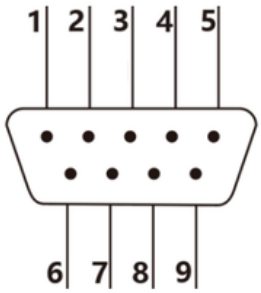


**Figure D-SUB9 Pin No.**

**Table D-SUB9 Line sequence definition**

| D-SUB9 Equipment end Pin No. | Line sequence definition |
|---|---|
| 1 | Analog voltage output (0-5V) |
| 2 | RS485-A |
| 3 | Analog voltage input (0-5V) |
| 4 | Analog ground |
| 5 | RS485-B |
| 6 | Please do not connect |
| 7 | Please do not connect |
| 8 | Power supply ground |
| 9 | Positive pole of power supply (DC24V) |

# Model Code : PE series gas mass flow controller

**Sample Standard Model Code**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| PE | 1 | $H_2$ | 20sccm | R4 | A | 1C | F | NC | 1 |

| Code Description | Code Option | Option Description |
|---|---|---|
| 1.Base Model Numbers | PE | Advanced Mass Flow |
| 2.Function | 1 | Mass Flow Controller |
| | 2 | Mass Flow Meter |
| 3.Gas type | | Air, $N_2$, $O_2$, $CO_2$, He, $H_2$, $CH_4$, Ar, etc. |
| 4.Range | 20sccm | 0-20sccm |
| | 200sccm | 0-200sccm |
| | 500sccm | 0-500sccm |
| | 1slm | 0-1slm |
| | 5slm | 0-5slm |
| | 10slm | 0-10slm |
| | 20slm | 0-20slm |
| | | Specify flow rate range. (Max. flow rate 20slm) |
| 5.Digital I/O Communication | R4 | RS485 |
| 6.Analog control | N | None - Digital Communications only |
| | A | 4-20 mA |
| | V | 0-5 Volt |
| 7.Mechanical Connection | 1C | 1/4” tube compression |
| | 1R | 1/4” VCR |
| 8.O-ring Material | F | Fluoroelastomer (FKM) |
| 9.Valve Type | NC | Normally closed |
| 10.Power Supply Inputs | 1 | 24 Vdc |