

# PRODUCT DATASHEET

## UT-series

Gas Mass Flow Controller

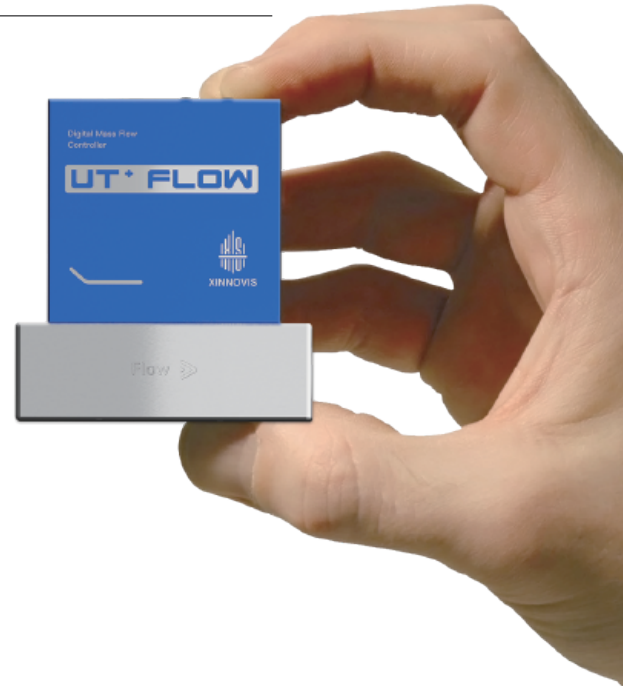


Qingdao Xinnovis Microsystem Technology Co., Ltd.

Tel: 86 400 006 6550

# Compact gas mass flow controller

UT series products adopt the company's new integrated design concept. While maintaining high accuracy and stability, their size and weight are compressed to 1/6 and 1/5 of the current conventional products, which are suitable for high-end analytical instruments. The product adopts the latest generation of industrial-grade gas flow detection chip, high-end electromagnetic proportional valve, aviation aluminum alloy gas circuit base, combined with high-speed digital processing circuit and temperature compensation algorithm, and can achieve rapid control of gas flow within the minimum 0.1scm and maximum 20slm flow range. This product can be used in high-end instruments and equipment such as mass spectrometer, spectrometer, gas chromatograph and gas distributor.



## Features

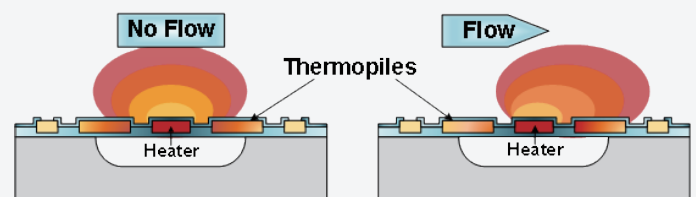
- Compact structure, easy to install
- Superior zero stability
- Temperature and pressure insensitive
- Good repeatability and reproducibility
- Fast response speed
- Equipped with high-end solenoid proportional valve

## Applications

- Gas chromatograph
- Mass spectrometer
- Spectrograph
- Gas distributor
- Food and Pharmaceutical

### MEMS Flow Sensor Chip Work Principle

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.



Temperature Distribution

# Specifications

Parameters	
Requirements	Clean, Dry and non-corrosive
Gas type	Air, N <sub>2</sub> , O <sub>2</sub> , CO <sub>2</sub> , He, H <sub>2</sub> , CH <sub>4</sub> , Ar, etc
Full scale <sup>①</sup>	(10, 50, 100, 200, 500,) sccm (0~1, 2, 5, 10, 20) slm
Accuracy	0.8%F.S. <sup>②</sup> Or 1.0%S.P. <sup>③</sup> (Whichever is larger)
Range Ratio	100:1
Response time <sup>④</sup>	≤ 1 s
Repetition Accuracy	≤ ±0.2%F.S.
Resolution Ratio	≤100sccm, 0.01sccm ≤1000sccm and >100sccm, 0.1sccm ≤5000sccm and >1000sccm, 1sccm >5slm, 0.01slm
Leakage rate	≤ 1×10 <sup>-9</sup> Pa m <sup>3</sup> /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 <sup>⑤</sup>	>2slm, 0.5~4bar ≤ 2slm, 0.5~6bar (Specific range related)
Storage Temp.	-20~85°C
Electric parameters	
Power voltage	DC24V

Power Consumption	≤2.4W
Starting time	≤1s
Communication interface	
Interface type	RJ45
Analog control	No (optional with 0-5V external adapter)
Digital control	RS485
Digital signal(RS485)	
Interface type	RJ45
Communication rate	9600(default), 14400, 19200, 38400, 56000, 57600, 115200 (Can be modified by instructions or PC computer)
Protocol	Modbus-RTU
Address	1 (Default)~250 (Can be modified by instructions or PC computer)
Mechanical parameters	
Connector type	<5slm, G1/8 internal thread 10~20slm, G1/4 internal thread
Gas contact material	316L stainless steel, FKM rubber, Silica
Main material	Foundation: 316L stainless steel Shell: Aluminum alloy
Sealing material	FKM rubber
Weight	0.18kg

## Remarks

\* Unless otherwise stated, this product is calibrated under the following conditions: N<sub>2</sub>, temperature 25 °C, 2.5bar differential pressure (inlet 3.5bar absolute pressure, outlet 1bar 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 N<sub>2</sub>.

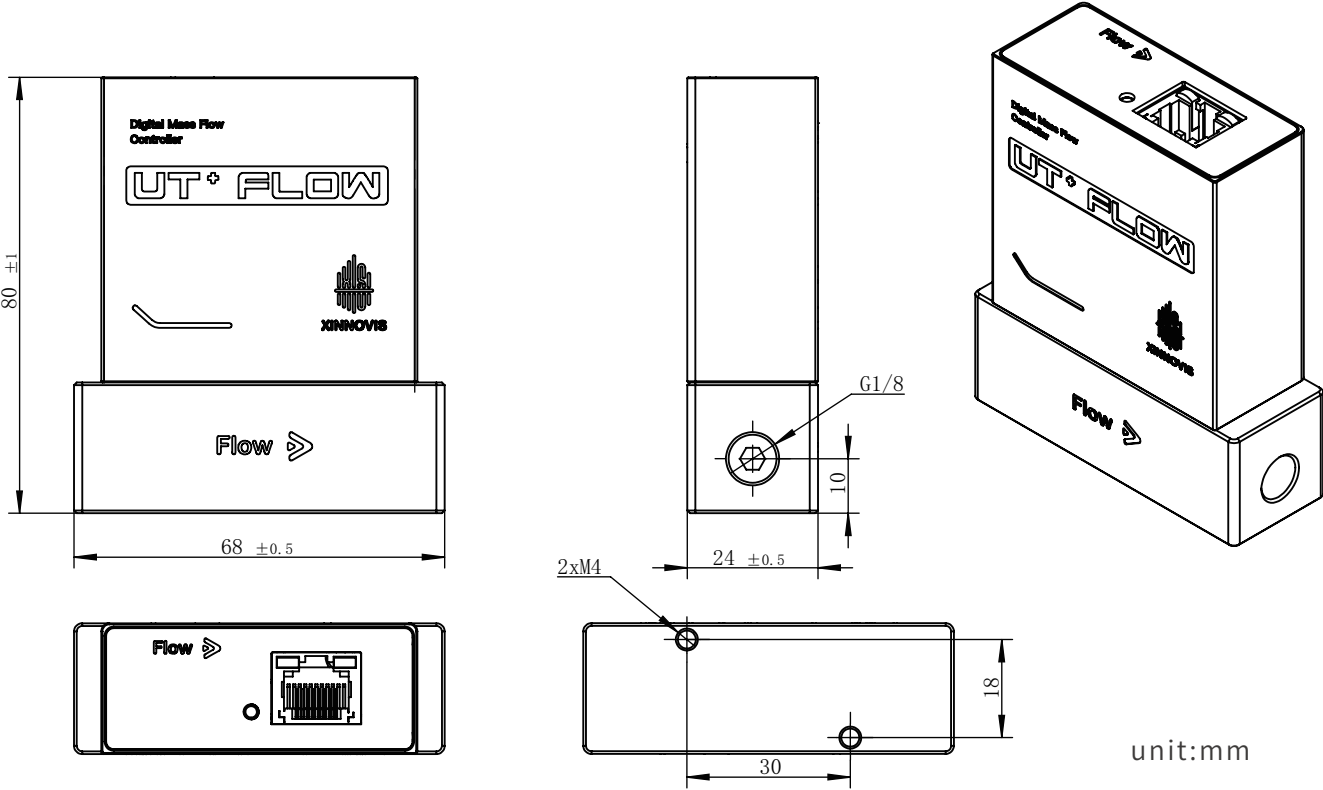
② %F.S. is the percentage of error to full range.

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

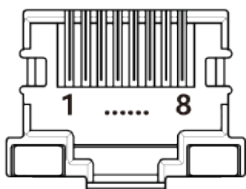
④ Response time refers to the time required to reach the set value within ± 2%.

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

Dimensions



Communication



RJ45 Equipment End Pin No.

RJ45 Equipment end Pin No.	Line sequence definition
1	Please don't connect
2	Please don't connect
3	Please don't connect
4	RS485-A
5	RS485-B
6	Please don't connect
7	GND
8	POWER

## Selection Guide

Code example:UT-01-C100-D4	Code	Example
Model		
UT-series flow controller (with valve)	UT	UT
Gas type		
<u>Code</u> N2 Air O2 CO2 Ar CH4 H2 He	01 02 03 04 05 06 07 08	01
Range ①		
10 sccm 20 sccm 50 sccm 100 sccm 200 sccm 500 sccm 1 slm 5 slm 10 slm 20 slm	C010 C020 C050 C100 C200 C500 L001 L005 L010 L020	C100
Communication Protocol		
RS485	D4	D4

① Optional ranges of N2 are shown.

Remarks: G1/4 internal thread is used inside the product, and customization is not supported.  
If the gas, range, joint type, etc, you require are not shown in the table, please contact us.

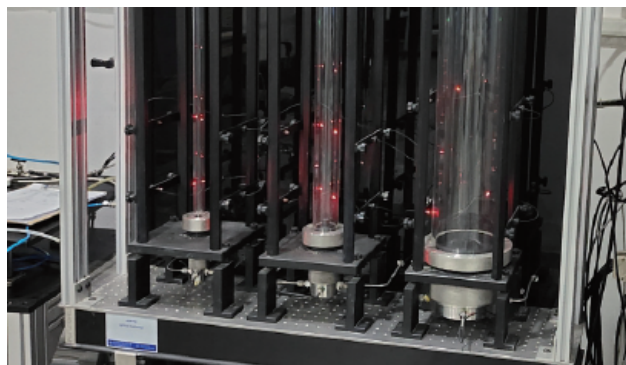
## Services

### Customer Benefits

- Short delivery time, quick response to orders
- Superior product stability, lower maintenance costs, Improve service life
- Cost-effective, Reduce customer purchasing cost
- Adjust the product configuration according to the on-site use environment
- Strong R&D and technical support team, to provide users with professional pre-sales and after-sales service

### Calibration Service

In the process of calibration, it has a number of high-end equipment, such as piston standard flow device (accuracy of 0.3% R.D.), sonic nozzle standard flow device (accuracy of 0.13% R.D.), American Fluke Molbox flow device (accuracy of 0.125% R.D.), to ensure product accuracy.





## Safety And Warranty

### safety use

When the product is used for hazardous gas or explosive gas, it must strictly follow the product instructions or consult the company's technical personnel. For the latest information about the product application, please contact the manufacturer or visit the company's website. The product has been sealed and leak proof test has been carried out before packing. It must be used under high pressure according to the restrictions of the product instructions, otherwise it will cause leakage and safety problems. When the product is used for hazardous gas or explosive gas, it must strictly follow the product instructions or consult the company's technical personnel. For the latest information about the product application, please contact the manufacturer or visit the company's website. The product has been sealed and leak proof test has been carried out before packing. It must be used under high pressure according to the restrictions of the product instructions, otherwise it will cause leakage and safety problems.

Note: The company will not be responsible for any unforeseen damage, personal injury and other harmful consequences caused by any change or improper use of this product without the company's permission.

### product warranty

The product must be installed, used and maintained in strict accordance with the correct method under the normal working conditions specified in the manual. The product warranty period is 365 days from the date of delivery. For repaired or replaced products, the warranty period is 90 days or extension of the original warranty period (Whichever is longer) .

Xinnovis Microsystem Technology Co.,Ltd(hereinafter referred to as Qingdao Xinnovis) shall not be liable for any direct and indirect damages and losses caused by the installation, disassembly and replacement (but not limited to the installation, disassembly and replacement). In order to avoid unnecessary disputes, the user should return the problematic products to the company. After the company confirms the problem, the company will decide to repair or replace it. The user shall bear the costs and possible risks of delivering the product to Qingdao

Xinnovis, and Qingdao Xinnovis shall bear the costs and possible risks of returning the product to the customer. All sales contracts of Qingdao Xinnovis confirm that the user automatically accepts this warranty condition and the limited liability of Qingdao Xinnovis. Only Qingdao Xinnovis has the right to change, amend the warranty conditions or decide not to implement its terms.

Note that the following conditions do not apply to the warranty:

- 1) The product is changed, modified, in an abnormal environment (or otherwise) specified in the manual and any other circumstances that can be considered as abnormal use.
- 2) Not the original product of Xinnovis.

## **Env. requirement**

For the unpacked packaging box, filling materials, anti-static bags and other wastes, please classify them according to paper, plastic and other wastes. For the products that have reached the service life, please refer to the relevant national scrapping regulations for electronic and electrical products.





**Qingdao Xinnovis Microsystem Technology Co.,Ltd.**

☎ 86 400 006 6550

🖱 [www.xinnovis.com](http://www.xinnovis.com)

✉ [service@xinnovis.com](mailto:service@xinnovis.com)

📍 12th Floor, Building B, Qingdao International Innovation Park,  
No.169 Songling Road, Laoshan District, Qingdao, China



Company website



WeChat Official Account