

Mini Thermal Mass Flowmeter**GT600M****GTC Global Co., Ltd.**

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1. Product Overview

The GT600M is a high-precision micro thermal mass flow meter engineered to measure minute gas flows. At its core is a sophisticated **MEMS (Micro-Electro-Mechanical Systems) flow sensor** that ensures stability and accuracy even in fluctuating environments.

The device utilizes **thermal gas flow measurement technology**.

The MEMS chip contains a micro-heater positioned between upstream and downstream thermopiles.

- **Measurement:** As gas flows over the sensor, it carries heat from the micro-heater to the downstream thermopile.
- **Calculation:** By measuring the temperature differential between the two thermopiles and combining it with the heater's power consumption, the device calculates the **mass flow** of the gas.
- **Direct Mass Flow:** Unlike volumetric meters, this technology measures mass directly, eliminating the need for external temperature or pressure compensation.

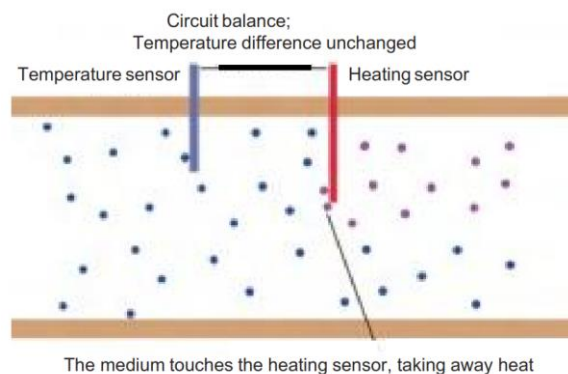
2. Product features and advantages

- **High Precision & Rapid Response:** The MEMS chip offers high sensitivity, minimal preheating time, and near-zero point drift.
- **Simplified Data:** Directly measures mass flow, removing errors typically introduced by manual compensation for temperature, pressure, or humidity.
- **Reliable Accuracy:**
 - **Full-scale error:** $\pm 1.5\%$
 - **Repeatability:** 0.2% to 0.5% of full scale.
- **Exceptional Range ability:** A wide turndown ratio of **100:1** allows the device to detect everything from micro-leakages to standard operational flows.
- **Versatility:** Capable of measuring various gases accurately, provided their thermal conductivity characteristics remain stable.
- **Durability:** With no moving parts, the sensor is resistant to mechanical wear and tear, ensuring a long service life and reduced maintenance.
- **Digital Integration:** The digital circuit design ensures accurate signal processing and seamless communication with industrial automation systems and computers.

3. Working principle

Temperature sensor measures the medium temperature.

The heating sensor is automatically heated to a temperature X degrees higher than the temperature sensor, keeping the temperature difference unchanged, when the medium flows, it will take away the heat value of the heating sensor, so that the heating sensor power is higher to keep the temperature difference unchanged, and the flow rate the medium can be known according to the power of the heating sensor.



4. Basic parameters

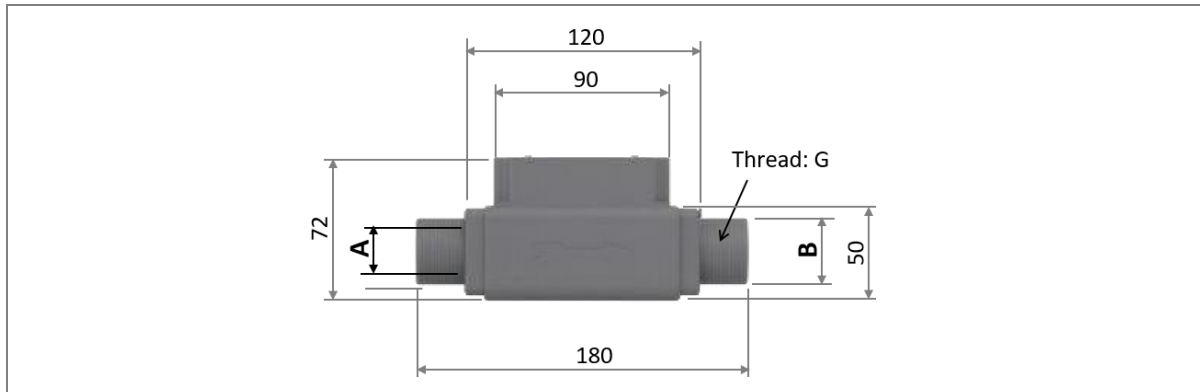
Mini Thermal mass flow meter-appearance structure.



Nominal Bore (mm)	DN8, DN10, DN15, DN20
Structural form	Threaded connection
Pressure class (MPa)	0 ~ 1.0MPa Special: 1.0MPa ~ 2.0MPa
Use conditions	Medium temperature: -45°C ~ 125°C Ambient temperature: -20°C ~ 65°C Relative humidity: 5% ~ 90% Atmospheric pressure: 86 ~ 106kPa
Material	Shell material: SS304, Aluminum alloy, SS316L Sensor material: Ceramic glass coated resistive sensor (others are specially customized)
Precision	±1.5% R
Flow velocity range	0.05 ~ 50Nm/s
Flow rate range	100 : 1
Optional unit	mL/min, NL/min, g/s, g/min, kg/min, kg/h, Nm³/min, Nm³/h
Power supply	24VDC
Corresponding speed	1s
Pressure loss	None
Output signal	Pulse output; 4-20mA current, RS485 (Modbus-RTU protocol), Alarm signal (1-2 circuits normally open contact, 24V/0.5A)
Transmission distance	Distance from the sensor to the display meter can be up to 1000m
Real-time recording	Daily records; records at fixed intervals
Explosion-proof level	Exd IIC T6 Gb
Protection level	IP65
Electrical interface	M12 (6-pin) aviation plug
Applicable medium	Various dry gases or mixtures of gases of known composition

5. Dimension and flow range of the flow meter

The main dimensions of each model are consistent, but the thread specifications of the intake and exhaust ports are different, and the specific dimensions are shown in the following figure



nominal bore DN (mm)	Thread size G	Air range (m³/h)
DN8	G 1/4	050ml~50NL/min
DN10	G 3/8	0.3L~300NL/ min
DN15	G 1/2	5L~500NL/ min
DN20	G 3/4	10L~1000NL/ min
DN25	G 1	20L~2000NL/ min

6. Model Selection

Category	Code	Product Series
GT600M	Mini Thermal mass flow meter	
Nominal diameter	XX	DN8, DN10, DN15, DN20, DN25
Use environment	P	General type
	EX	Explosion-proof type
Output mode	1	Pulse output - Three-wire system
	2	4~20mA current output - Two-wire system
	3	RS485/ Modbus Protocol (Four-wire system)
	4	Hart protocol
Display mode	V	Display flow rate
	P	Display temperature
Connection mode	1	Clamp connection type
	2	Threaded connection type
Body material	1	SUS304
	2	SUS316L
	3	Aluminum alloy

7. Installation requirements and precautions

- **Full-pipe guarantee:**
The pipeline must always be completely filled with medium. Otherwise, the flow display will be affected, resulting in measurement errors.
- **Requirements for straight pipe sections:**
When installing the instrument, it should be away from elbows, obstacles, diameter changes, valves, etc., to ensure a stable flow field.

One side requires a longer straight pipe section, with the front straight pipe section length greater than 10D and the rear straight pipe section length greater than 5D; see factory instructions for details.