

## Thermal Gas Mass Flow Meter

### APPLICATION

- Oxygen, nitrogen, hydrogen, chlorine and multi-component gas measurements.
- Blast furnace gas, coke oven gas measurement.
- Flue gas measurement.
- Aeration and chlorine measurement in biogas and water treatment.
- Compressed air measurement.
- Natural gas, liquefied gas, flare gas, and other gas flow measurements.
- Primary wind and secondary air flow measurement of power plant blast furnace.
- Flow measurement of underground ventilation or exhaust system.

### OVERVIEW

The GMM series of thermal gas mass flow meters are instruments that measure the mass flow of gases using the principle of heat transfer.



The meter's sensor consists of two reference-level thermal resistors (platinum RTD). One is the mass velocity sensor T1, and the other is the temperature sensor T2 that measures the temperature change of the gas. When the two RTDs are placed in the gas to be measured, the sensor T1 is heated to a constant temperature difference above the gas temperature, and the other sensor T2 is used to sense the temperature of the gas being measured. As the gas mass flow rate increases, the airflow takes more heat, and the temperature of the sensor T1 decreases. To maintain a constant temperature difference between T1 and T2, the heating power of T1 increases. According to the law of Kin's law of thermal effect, the heating power P, the temperature difference  $\Delta T (T1-T2)$  and the mass flow rate Q have a certain mathematical relationship.

### SPECIFICATION

ITEMS	Plug-in type	Pipe segment type
Installation process form	sleeve + ball valve, flange connection	flange, threaded connection
Pipe diameter range	DN80 ~6000mm	DN15 ~2000mm
Work pressure	Medium pressure $\leq 2.5\text{Mpa}$	Medium pressure $\leq 4.0\text{Mpa}$
Sensor material	stainless steel	Stainless steel, carbon steel
Measuring medium	Various gases (except acetylene gas)	
Flow rate range	0 ~ 120Nm / s (20 ° C, 101.33KPa)	
Range ratio	usually 1000: 1 (depending on the range of calibration flow)	
Accuracy	$\pm 1\%$ of reading $\pm 0.5\%$ of full scale	
Ambient temperature	-40°C to +85°C (no display); -30°C to +70°C (with display)	
Medium temperature	-40 ° C ~ +100 ° C; -40 ° C ~ +200 ° C ; -40 ° C ~ +450 ° C; -40 ° C ~ + 510 ° C	
Power supply	One machine (DC24V or AC220V $\leq 18\text{W}$ ) split converter (AC220V $\leq 19\text{W}$ )	
O utput signal	4-20mA (optical isolation, maximum 500 $\Omega$ load) RS-485 (optical isolation)	
Pipe material	Glass, stainless steel, plastic, etc.	
Display	Integrated: 8-bit field + 24 prompts, Split type: 10×2 character display	
Display content	Mass flow, standard volume flow, cumulative flow, standard time, cumulative running time, etc.	
Split converter profile	Wall-mounted: 213 × 185 × 107mm Panel mounted: 160 × 80 × 160mm	
Converter and primary	$\leq 25\text{m}$ (the primary meter is powered by the split converter), $\leq 1000\text{m}$ (the primary meter is powered	
Protection level	IP67	
Explosion	ExdIICT4	



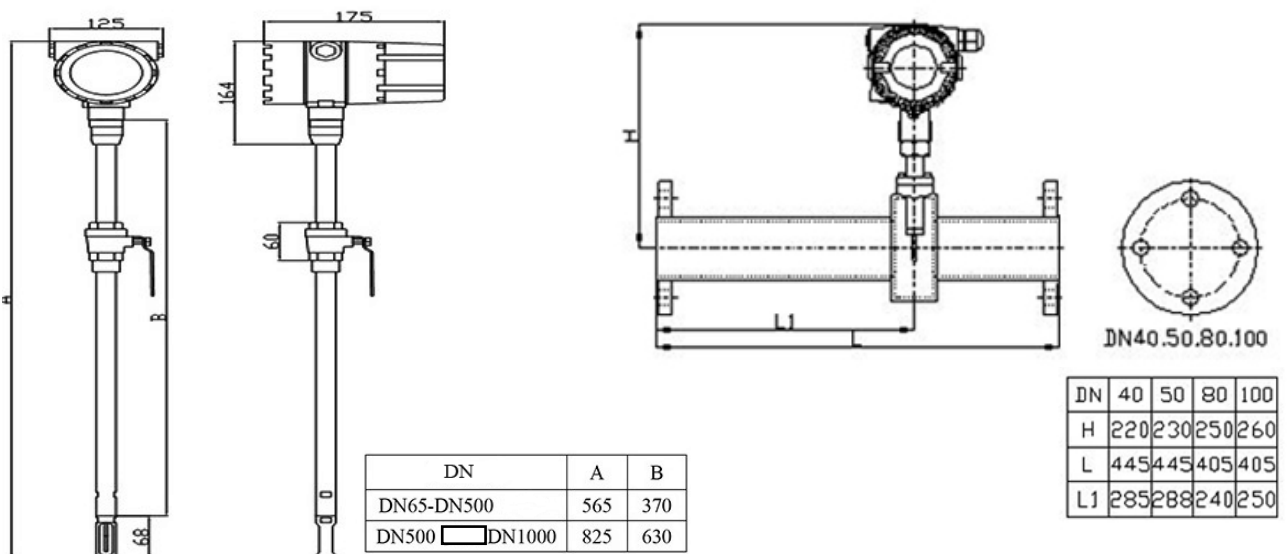
VARIANTS

Plug-in type	Pipeline type
	
<ul style="list-style-type: none"> <li>The plug-in sensor can be installed and maintained online.</li> <li>Applicable pipe diameter of plug-in sensor: DN80 ~ 6000mm.</li> </ul>	<ul style="list-style-type: none"> <li>The connection mode of flowmeter and field pipeline is flange connection or screw connection.</li> <li>Section type sensor is suitable for gas mass flow measurement with pipe diameter less than DN65.</li> </ul>

FLOW RANGE

DN(mm)	Flow Range(Nm <sup>3</sup> /h)	DN(mm)	Flow Range(Nm <sup>3</sup> /h)	DN(mm)	Flow Range(Nm <sup>3</sup> /h)
10	0.12~17	150	30~3800	900	100~14000
15	0.3~40	200	50~6800	1000	1200~170000
20	0.5~70	250	100~10000	1200	2000~240000
25	0.7~100	300	150~15000	1400	3000~330000
32	1.2~170	350	200~20000	1600	3500~430000
40	2~270	400	250~27000	1800	4000~550000
50	3~420	450	300~35000	2000	5000~680000
65	5~720	500	350~42000	2200	6000~820000
80	8~1100	600	500~61000	2400	7000~976000
100	12~1700	700	600~83000	2600	8000~1146000
125	20~2600	800	800~100000	2800	11000~1526000

DIMENSION



ORDER GUIDE

MM5000	Parameter	Explanation	Order Code
A	Typs	1. Plug in (ferrule, ferrule + ball valve, flange connection) 2. Pipe type (flange, threaded connection)	1
B	Caliber	10mm~6000mm (See Above Table )	Please choose specific diameter needed
C	Measuring Range	0-120Nm/s	Please choose specific
D	Accuracy	A ± 1% reading B ± 0.5% of full scale	A
E	Medium temperature	A -40°C~+100°C B -40°C +200°C C -40°C~ +510°C	A
F	Sensing diameter	1. Φ3 2. φ 2.5 3. φ 16 4. φ 16 5. φ 12	3
G	Signal output	1-4 ~ 20mA 2-RS485 3. Others customized	2
H	Power supply	A. 24VDC/2W B. 220VDC/2W C. 110V/3W	B
I	Relay alarms	A. 1-2 relay outputs B. 5A/220V C. 5A/30VDC	B
J	Pressure (MPA)	A ≤0.6 B ≤1 C ≤1.6 D ≤2.5 E ≤4 F ≤6 G ≤10 H ≤16 J ≤20	H
K	Body material	A-304 stainless steel B-316 stainless steel	B
L	Mounting length/ shaft length	1. 160mm 2. 220mm 3. 300mm 4. 400mm 5. 500mm 6. 600mm 7. 1000mm	4
M	Explosion proof grade	A. Intrinsic safety type (IA II CT5) B. ATEX II Ex d IIC T4	A



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