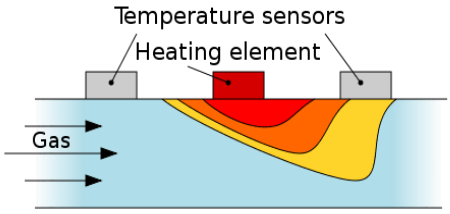
Thermal Gas Mass Flowmeter GT600 series

Greentech Korea Co., Ltd.
Tel: 82.53.762.6668 Fax: 82.53.355.7295
E-mail: gtcinfo@naver.com
Add.: 121-3, Yutongdanji-ro 8-gil, Buk-gu, Daegu, Korea 41515

1. Introduction

GT600 series Thermal Gas Mass Flowmeter is designed on the basis of thermal dispersion and adopts the method of constant differential temperature to measuring gas flow.
It has advantages of small size, easy installation, high reliability, and high accuracy, etc.

The meter contains two platinum resistance temperature sensors. The thermal principle operates by monitoring the cooling effect of a gas stream as it passes over a heated sensor.
Gas flowing through the sensing section passes over two sensors one of which is used conventionally as a temperature sensor, whilst the other is used as a heater.
The temperature sensor monitors the actual process values whilst the heater is maintained at a constant differential temperature above this by varying the power consumed by the sensor.
The greater the gas velocity, the greater the cooling effect and power required to maintain the differential temperature. The measured heater power is therefore a measure of the gas mass flow rate.



2. Feature

- Measuring the mass flow or volume flow of gas,
- Do not need to do temperature and pressure compensation in principle with accurate measurement and easy operation,
- Wide range: 0.5Nm/s~100Nm/s for gas. The meter also can be used for gas leak detection.
- Good vibration resistance and long service life. No moving parts and pressure sensor in transducer, no vibration influence on the measurement accuracy.
- Easy installation and maintenance. If the conditions on site are permissible, the meter can achieve a hot-tapped installation and maintenance. (Special order of custom-made),
- Digital design, high accuracy and stability.
- Configuring with RS485 or HART interface to realize factory automation and integration.

3. Application

GT600 series Thermal Gas Mass Flowmeters are suitable for a variety of processes requiring mass flow measurement and are frequently used for the regulation of low gas flows. Some common gas flow applications for thermal mass flow meters include.

- Compressed air flow and distribution
- Natural gas consumption eg for burner and boiler feed control
- Monitoring and control of stack or flue gas (where composition known)
- Landfill gas recovery
- Flare gas measurement
- Gas flow mixing & blending
- Gas leak testing and detection

4. Technical Parameters

Structure type	Plug-in	Pipeline
		
Measuring medium	Common steady-state gases (unstable media such as acetylene and boron trichloride are not measurable)	
Pipe size	DN65~DN4000mm	DN15~DN2000mm
Velocity	0.1~120 Nm/s	
Accuracy	±1~2.5%	
Operating temperature	Sensor: -40°C ~ +350°C	
	Transmitter: -20°C~ +45°C	
Pressure	Medium pressure ≤1.6MPa (≥1.6MPa Agreement supply)	Medium pressure ≤1.6MPa (≥4.0MPa Agreement supply)
Power	24VDC ≥18W	
Response time	2s	
Output	4-20mA (Optical isolation, Maximum load 500ohm), RS485 (Lightning protection)	
Alarm output	1-2 normally open contacts, 24V/ 0.5A	
Type of supply	Integrated structure	
Pipe material	Carbon steel, Stainless steel, Plastic, Etc	
Live display	Four-line LCD display	
Display content	Mass flow rate, standard volume flow rate, cumulative flow rate, standard flow rate, etc.	
Protection level	IP65, IP67, IP68	
Sensor housing material	Stainless steel	Stainless steel, Carbon steel

5. Flow range

(Unit: Nm^3/h. The follow table can be extended)

Meter Size		Air	Nitrogen (N2)	Oxygen (O2)	Hydrogen (H2)
(mm)	(inch)				
15	**1/2 ”**	65	65	32	10
25	**1 ”**	175	175	89	28
32	**1 1/4 ”**	290	290	144	45
40	**1 1/2 ”**	450	450	226	70
50	**2 ”**	700	700	352	110
65	**2 1/2 ”**	1,200	1,200	600	185
80	**3 ”**	1,800	1,800	900	280
100	**4 ”**	2,800	2,800	1,420	470
125	**5 ”**	4,400	4,400	2,210	700
150	**6 ”**	6,300	6,300	3,200	940
200	**8 ”**	10,000	10,000	5,650	1,880
250	**10 ”**	17,000	17,000	8,830	2,820
300	**12 ”**	25,000	25,000	12,720	4,060
400	**16 ”**	45,000	45,000	22,608	7,200
500	**20 ”**	70,000	70,000	35,325	11,280
600	**24 ”**	100,000	100,000	50,638	16,300
700	**28 ”**	135,000	135,000	69,240	22,100
800	**32 ”**	180,000	180,000	90,432	29,000
900	**36 ”**	220,000	220,000	114,500	77,807
1000	**40 ”**	280,000	280,000	141,300	81,120
1200	**48 ”**	400,000	400,000	203,480	91,972
1500	**60 ”**	600,000	600,000	318,000	101,520
2000	**80 ”**	700,000	700,000	565,200	180,480

The flow rate in standard condition: The flow rate is in the condition of 20°C temperature and 101.325kPa pressure.
The unit of flow rate is optional: Nm3/h, Nm3/min, L/h, L/min, t/h, t/min, kg/h or kg/min.
The reduction formula of flow rate in working condition and flow rate in standard condition

$$Qs = \frac{0.101325+p}{0.10325} \times \frac{273.15+20}{273.15+t} \times Qn$$

Qs: The flow rate in standard condition (Nm^3/h).
Qn: The flow rate in working condition (m^3/h).
t: The medium temperature in working condition (°C)
p: The medium pressure in working condition (Gauge pressure, MPa)

6. Installation size

6.1 Flange mounting

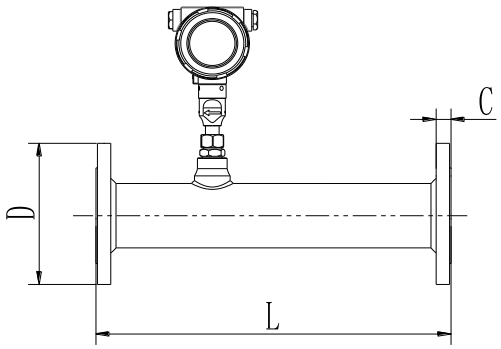


Figure 1

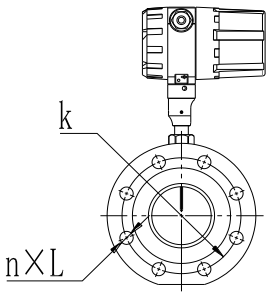


Figure 2

PN1.6Mpa (16bar) Flat, protruding panel flat welded steel pipe flange Unit: mm

	Pipeline Length	Flange Outer diameter	Center Hole	Screw Hole	Screw Thread	Flange thickness
DN	**L**	**D**	**K**	**n*L**		**C**
15	160	95	65	4*14	M12	12
20	160	105	75	4*14	M12	14
25	160	115	85	4*14	M12	14
32	160	140	100	4*18	M16	16
40	180	150	110	4*18	M16	16
50	180	165	125	4*18	M16	18
65	180	185	145	4*18	M16	20
80	180	200	160	8*18	M16	20
100	200	220	180	8*18	M16	20
125	200	250	210	8*18	M16	20
150	200	285	240	8*22	M20	22
200	200	340	295	12*22	M20	22
250	200	405	355	12*26	M24	24
300	200	460	410	12*26	M24	24

6.2 Plug-in mounting

Unit: mm

(1) The integral plug-in type should be inserted into the axis of the pipe to be tested, so the length of the measuring rod depends on the diameter of the measuring pipe. It should be stated when ordering.
(2) If it cannot be inserted into the pipe axis, the factory will provide the calibration factor to complete the accurate measurement.

Unit: mm

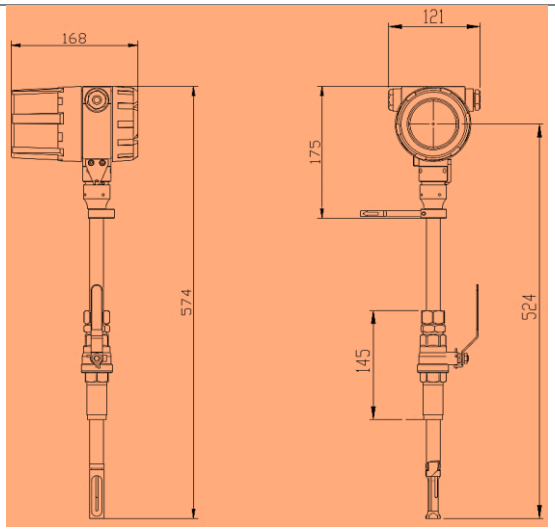


Figure 3

DN	B	C	D	F
DN50	563	126	145	511
DN65~DN400	576	126	145	524
DN450~DN600	676	126	145	624
DN650~DN800	826	126	145	774

6.3 Wafer mounting

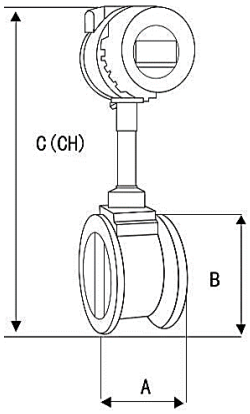
DN	Caliber DN	A	B	C (CH)
	**15~25**	70	55	390 (455)
	32	70	55	390 (455)
	40	85	80	385 (440)
	50	85	90	390 (450)
	65	85	105	400 (470)
	80	85	120	420 (480)
	100	85	140	440 (500)
	125	90	165	465 (530)
	150	100	194	490 (560)
	200	102	248	545 (610)
	250	115	300	595 (650)
	300	130	350	645 (710)

Figure 4

(1) For DN15 ~ DN80 can be used pipe thread connection.
(2) Only the maximum rated pressure data of 1.6Mpa is given in the table, and it can be customized above the rated pressure.
(3) The integral full tube can be flanged, threaded and snap-fit.

7. Model Selection

Code			Description
GT600H series			Thermal Gas Mass Flowmeter
Meter type		T	Thread
		F	Flange
		IX	Insertion **IT**: Thread connection **IF**: Flange connection **ITF**: Tapered flange connection
Ball valve		YX	**YT**: Thread ball valve **YF**: Flange ball valve
		N	No
Nominal diameter		XX	DN10……..DN4000
Material	Sensor probe	04	SUS304
		16	SUS316L
	Ball valve	N	Not included.
		04	SUS304
		16	SUS316L
Pressure Level		1	1.6 MPa
		2	2.5 MPa
		4	4.0 MPa
Accuracy		1	Standard 1.5% F.S.
		2	Option 1.0% F.S.
Connection		T	Thread
		A	ANSI flange.
		D	DIN flange.
		J	JIS flange.
		O	Other
Max. Temperature		1	-40 ~220°C
		2	-40 ~350°C
Power supply		A	220V AC
		D	24V DC
Output		1	RS485, 4…20mA, Pulse
		2	HART, RS485, 4…20mA, Pulse
		3	Relay outputs, RS485, 4…20mA, Pulse
Structure Type		I	Integrated type
		R ( )	Remote separated **(5)**: 5meter cable **(10)**: 10meter cable
Pipe size		XX	Pipe Diameter