

Product overview



FM600 capacitive target flowmeter is based on the traditional target flowmeter, with the development of new sensors, microelectronics technology research and development into a new type of capacitance induction flowmeter, it has both orifice plate, vortex flowmeter is the characteristics of the moving parts, and also has the very high sensitivity and accuracy of the comparable to those of volumetric flowmeter, span a wide range. Adopts chip level capacitive force sensor, the highly effective resistance to overload structure design is the new product realize high precision, high stability, the key to the core, combined with its unique anti-interference, impurity resistance, in addition to substitute for the conventional flow measurement can measure flow problems, especially in high viscosity, smudgy medium, easy setting wall, high temperature, low temperature, strong corrosion and other flow measurement has the very good adaptability in difficult conditions.

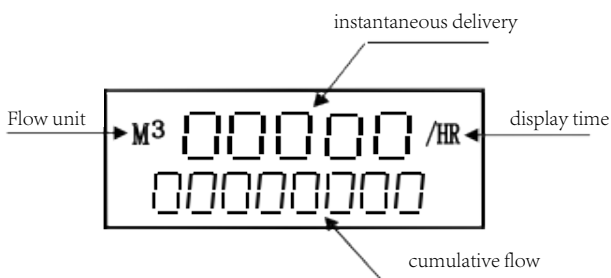
Widely used in petroleum, chemical, metallurgy, electric power, pharmaceutical, environmental protection, food and other fields.

- wide range of pipe diameter: 2000 to bigger $\Phi 10 \sim \Phi$;
- temperature range: $-200^{\circ}\text{C} \sim 700^{\circ}\text{C}$;
- high/low pressure working condition: $0 \sim 42\text{MPa}$;
- gas, liquid (high viscosity liquid, slurry), steam;
- low flow medium with a minimum velocity of 0.08m/s.

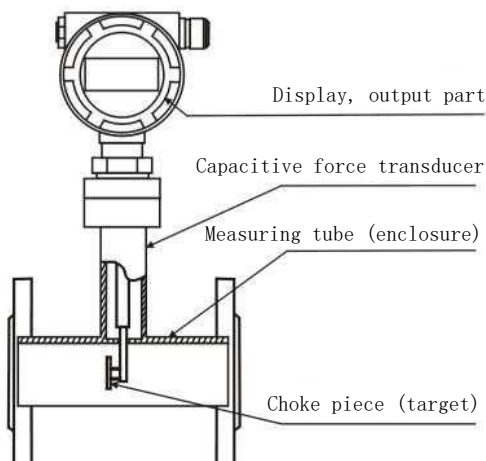
Product features

- ◆The whole instrument has strong structure and no moving parts, easy to disassemble
- ◆Can choose a variety of anti-corrosion and high and low temperature resistant materials (such as haselloy alloy, titanium, etc.)
- ◆The machine can be fully sealed without dead corner (welding), without any leakage point, It can withstand 42MPa high pressure
- ◆Pressure loss is small, only about $1/2\Delta P$ of standard orifice plate
- ◆Anti - interference, anti - impurity ability is particularly strong
- ◆The instrument is equipped with self - check procedure, the failure phenomenon is clear
- ◆The sensor is not in contact with the measured medium, and there is no wear of parts. It is safe and reliable to use the dry calibration method in place
- ◆Single key operation can complete the calibration
- ◆There are a variety of installation options, such as the choice of online plug-in, low installation cost
- ◆ with integrated temperature, pressure compensation, direct output quality or standard
- ◆With optional small signal excision, nonlinear correction, filtering time can be selected
- ◆It can accurately measure the flow rate of gas and liquid under various working conditions of normal temperature, high temperature 500°C , low temperature -200°C
- ◆Accurate measurement, accuracy up to 0.2%
- ◆Good repeatability, generally $0.05\% \sim 0.08\%$, fast measurement
- ◆The range can be changed according to the actual need to replace the choke (target)
- ◆Low power battery field display, online direct reading display value, display screen can be at the same time Read instantaneous and cumulative flow and percentage bar charts easy to install and easy to maintain
- ◆A variety of output forms, can transmit a variety of parameters
- ◆Strong seismic resistance, the pulsating flow can be measured within a certain range

display



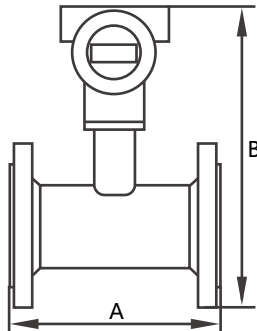
结构图



Technical parameters

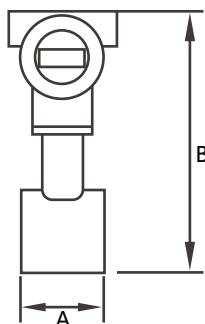
Measured medium	Liquid. Gas; steam			
Nominal diameter	flange 15~500mm	Clip mounted 15~500mm	plug-in 65~5000mm	
Nominal pressure	0. 6~42MPa	0.6~42MPa	0.6~42MPa	
Medium temperature	-200℃~+700℃ Or higher temperature			
accuracy of the fine	±0.2%	±0.5%	±1.0%	±1.5%
rangeability	1: 3 (liquid)	1: 8 (Liquid, gas)	1: 15 (Liquid, gas)	1: 12 (steam)
Compensation in the form of	Temperature compensation; Pressure compensation			
repetitive	0.05%~0.08%			
Power supply	Lithium battery (3.6v); External power supply 24VDC			
output form	On-site display; 4-20ma two-wire system; Pulse 0 ~ 5V; RS485 / RS232. GPRS wireless remote transmission; HART,			
Measuring tube material	Carbon steel; Stainless steel; Also can provide according to the user's request consultation			
Explosion-proof marks	Intrinsic safety type (ExialICT4); Flameproof (ExdIICT4)			
Protection grade	IP65; IP67			
Flange specifications	The flowmeter connection flange specification carries out the GB/T series standard, also may according to the user request the special processing.			

Size chart (mm)



Flanged pipe type

Nominal diameter DN(mm)	total width		Nominal diameter DN(mm)	total width	
	A	B		A	B
15	150	345	125	200	455
20	150	350	150	200	480
25	150	355	200	250	530
32	150	362	250	250	580
40	150	370	300	250	630
50	150	380	350	250	680
65	200	395	400	250	730
80	200	410	450	250	780
100	200	430	500	250	830



TKWP- TU

Nominal diameter DN(mm)	total width		Nominal diameter DN(mm)	total width	
	A	B		A	B
15	66	270	125	66	380
20	66	275	150	66	405
25	66	280	200	66	455
32	66	287	250	66	505
40	66	295	300	66	555
50	66	305	350	66	605
65	66	310	400	66	655
80	66	335	450	66	705
100	66	355	500	66	755

Nominal diameter DN(mm)	Measuring range of flowmeter (m ³ /h)	Target diameter ratio range	biggest pressure drop(kPa)
15	0.1 ~ 3	0.8 ~ 0.5	75.53
20	0.17 ~ 5	0.8 ~ 0.5	55.12
25	0.3 ~ 9	0.8 ~ 0.4	34.45
32	0.5 ~ 14	0.8 ~ 0.3	24.12
40	1.0 ~ 24	0.8 ~ 0.3	17.23
50	1.5 ~ 40	0.8 ~ 0.3	6.89
65	2.5 ~ 60	0.7 ~ 0.35	5.51
80	3.5 ~ 90	0.7 ~ 0.35	4.31
100	5 ~ 140	0.7 ~ 0.3	2.76
125	6 ~ 200	0.7 ~ 0.3	2.07
150	10 ~ 300	0.6 ~ 0.25	1.38
200	18 ~ 560	0.6 ~ 0.25	0.89
250	25 ~ 800	0.5 ~ 0.25	0.56
300	40 ~ 1200	0.5 ~ 0.2	0.35
350	50 ~ 1500	0.5 ~ 0.2	0.1
400	65 ~ 2000	0.5 ~ 0.2	0.07
450	90 ~ 2600	0.4 ~ 0.2	0.06
500	110 ~ 3300	0.4 ~ 0.2	0.05
550	140 ~ 4100	0.35 ~ 0.2	0.04
600	170 ~ 5000	0.3 ~ 0.15	0.03
700	230 ~ 6800	0.3 ~ 0.15	0.011
800	300 ~ 9000	0.3 ~ 0.15	0.0083
900	370 ~ 11000	0.3 ~ 0.15	0.0062
1000	470 ~ 14000	0.2 ~ 0.1	0.0055
1100	560 ~ 16000	0.2 ~ 0.1	0.0041
1200	670 ~ 20000	0.2 ~ 0.1	0.0034
1300	780 ~ 23000	0.2 ~ 0.1	0.0028
1400	900 ~ 27000	0.2 ~ 0.1	0.0018
1500	1050 ~ 31000	0.2 ~ 0.1	0.0016
1600	1200 ~ 32500	0.2 ~ 0.1	0.0014
1700	1350 ~ 36500	0.2 ~ 0.1	0.0012
1800	1510 ~ 40800	0.2 ~ 0.1	0.0011
1900	1680 ~ 45500	0.2 ~ 0.1	0.001
2000	1850 ~ 50000	0.2 ~ 0.1	0.0009
2100	1980 ~ 55800	0.2 ~ 0.1	0.0008

Note: actual pressure drop = (actual flow/full range flow) 2× maximum pressure drop in full range.

calculation

The selection of the FM600 series capacitive target flowmeters needs to be calculated to convert the actual flow into the same amount of standard flow, and then select the appropriate caliber and model according to the selection table. The calculation formula is as follows:

Liquid medium:

$$q_0 = q_1 \sqrt{\frac{\rho}{\rho_0}}$$

Gas medium:

$$Q_0 = Q_1 \sqrt{\frac{\rho}{\rho_N}}$$

q0— Flow rate of standard water (m³/h)

Q0— Standard dry air flow(Nm³/h)

q1—Actual liquid medium full range flow rate(m³/h)
rate(m³/h)

Q1—Actual gas medium standard state full range flow

ρ0—The density of water in standard state

ρN—Standard dry air density

ρ—Actual dielectric density

Standard condition means:

Normal pressure: Po=101.325kPa(perfect)

Standard state temperature: to=20°C

Standard air density: ρair= 1.293kg/m³

Standard water density: ρwater =999.8kg/m³

Measurement of saturated steam flow

Nominal diameter (DN) mm	Measuring range (gauge pressure) t/h									
	0.1MPa	0.2MPa	0.3MPa	0.4MPa	0.5MPa	0.6MPa	0.8MPa	1.0MPa	1.5MPa	2.0MPa
15	0.002~0.02	0.003~0.03	0.005~0.05	0.007~0.07	0.008~0.08	0.009~0.09	0.012~0.12	0.015~0.15	0.023~0.23	0.03~0.3
20	0.003~0.03	0.006~0.06	0.009~0.09	0.012~0.12	0.015~0.15	0.017~0.17	0.022~0.22	0.028~0.28	0.04~0.4	0.055~0.55
25	0.005~0.05	0.009~0.09	0.014~0.14	0.019~0.19	0.02~0.2	0.027~0.27	0.035~0.35	0.044~0.44	0.065~0.65	0.085~0.85
32	0.008~0.08	0.016~0.16	0.023~0.23	0.032~0.32	0.036~0.36	0.044~0.44	0.056~0.56	0.072~0.72	0.1~1.0	0.14~1.4
40	0.012~0.12	0.025~0.25	0.036~0.36	0.045~0.45	0.058~0.58	0.069~0.69	0.09~0.9	0.11~1.1	0.16~1.6	0.22~2.2
50	0.02~0.2	0.038~0.38	0.057~0.57	0.075~0.75	0.09~0.9	0.1~1.0	0.14~1.4	0.17~1.7	0.26~2.6	0.34~3.4
65	0.035~0.35	0.065~0.65	0.1~1.0	0.13~1.3	0.15~1.5	0.18~1.8	0.24~2.4	0.29~2.9	0.44~4.4	0.58~5.8
80	0.05~0.5	0.1~1.0	0.15~1.5	0.18~1.8	0.23~2.3	0.27~2.7	0.36~3.6	0.45~4.5	0.66~6.6	0.88~8.8
100	0.08~0.8	0.15~1.5	0.23~2.3	0.28~2.8	0.36~3.6	0.42~4.2	0.56~5.6	0.7~7.0	1.0~10	1.3~13
125	0.12~1.2	0.24~2.4	0.35~3.5	0.48~4.8	0.56~5.6	0.68~6.8	0.89~8.9	1.1~11	1.6~16	2.1~21
150	0.18~1.8	0.35~3.5	0.5~5.0	0.7~7.0	0.82~8.2	0.96~9.6	1.2~12	1.5~15	2.3~23	3.1~31
200	0.32~3.2	0.6~6.0	0.9~9.0	1.2~12	1.4~14	1.7~17	2.2~22	2.8~28	4.1~41	5.5~55
250	0.5~5.0	1.0~10	1.4~14	1.9~19	2.2~22	2.7~27	3.5~35	4.4~44	6.5~65	8.6~86
300	0.7~7.0	1.4~14	2.0~20	2.5~25	3.3~33	3.9~39	5~50	6.2~62	9.2~92	12~120
350	1.0~10	1.9~19	2.8~28	3.5~35	4.4~44	5.2~52	7~70	8.5~85	12~120	16-160
400	1.3~13	2.5~25	3.6~36	4.7~47	5.8~58	6.8~68	9~90	11~110	16~160	22~220
450	1.6~16	3.1~31	4.6~46	6.0~60	7.4~74	8.6~86	11~110	14~140	21~210	27~270
500	2.0~20	3.8~38	5.6~56	7.0~70	9.1~91	10~100	14~140	17~170	26~260	34~340

Standard dry air flow measurement

Nominal diameter DN(mm)	Measuring range (gauge pressure) Nm ³ /h								
	0.01MPa	0.1MPa	0.2MPa	0.3MPa	0.4MPa	0.6MPa	0.8MPa	1.0MPa	2.0MPa
15	2~20	4~40	6~60	8~80	10~100	14~140	18~180	22~220	42~420
20	3~30	6~60	9~90	12~120	15~150	21~210	27~270	33~330	63~630
25	5~50	10~100	15~150	20~200	25~250	35~350	45~450	55~550	105~1050
32	8~80	16~160	24~240	32~320	40~400	56~560	72~720	88~880	168~1680
40	13~130	26~260	39~390	42~420	65~650	91~910	117~1170	143~1430	273~2730
50	20~200	40~400	60~600	80~800	100~1000	140~1400	180~1800	220~2200	420~4200
65	35~350	70~700	105~1050	140~1400	175~1750	245~2450	315~3150	385~3850	735~7350
80	50~500	100~1000	150~1500	200~2000	250~2500	350~3500	450~4500	550~5500	1050~10500
100	80~800	160~1600	240~2400	320~3200	400~4000	560~5600	720~7200	880~8800	1680~16800
125	130~1300	260~2600	390~3900	420~4200	650~6500	910~9100	1170~11700	1430~14300	2730~27300
150	180~1800	360~3600	540~5400	720~7200	900~9000	1260~12600	1620~16200	1980~19800	3780~37800
200	300~3000	600~6000	900~9000	1200~12000	1500~15000	2100~21000	2700~27000	3300~33000	6300~63000
250	500~5000	1000~10000	1500~15000	2000~20000	2500~25000	3500~35000	4500~45000	5500~55000	10500~105000
300	750~7500	1500~15000	2250~22500	3000~30000	3750~37500	5250~52500	6750~67500	8250~82500	15750~157500
350	1000~10000	2000~20000	3000~30000	4000~40000	5000~50000	7000~70000	9000~90000	11000~110000	21000~210000
400	1300~13000	2600~26000	3900~39000	4200~42000	6500~65000	9100~91000	11700~11700000	14300~143000	27300~273000
450	1700~17000	3400~34000	5100~51000	6800~68000	8500~85000	11900~11900000	15300~153000	18700~187000	35700~357000
500	2000~20000	4000~40000	6000~60000	8000~80000	10000~100000	14000~140000	18000~180000	22000~220000	42000~420000
550	2500~25000	5000~50000	7500~75000	10000~100000	12500~125000	17500~175000	22500~225000	27500~275000	52500~525000
600	3000~30000	6000~60000	9000~90000	12000~120000	15000~150000	21000~210000	25000~250000	33000~330000	63000~630000
700	4000~40000	8000~80000	12000~120000	16000~160000	20000~200000	28000~280000	36000~360000	44000~440000	84000~840000
800	5000~50000	10000~100000	15000~150000	20000~200000	25000~250000	35000~350000	45000~450000	55000~550000	105000~1050000
900	6500~65000	13000~130000	19500~195000	26000~260000	32500~325000	45500~455000	58500~585000	71500~715000	136500~1365000
1000	8000~80000	16000~160000	24000~240000	32000~320000	40000~400000	56000~560000	72000~720000	88000~880000	168000~1680000

Selection table

FM600-	-	F	L	06	C1	F	H	S	detailed
FM600									FM600 Capacitive target flowmeter
	-								optional
	025								025:representative DN25
		F							flange type
		C							insertion
		D							clip type
		U							On-line disassembly type
		L							Tapered pipe thread type
			L						liquid
			G						gas
			S						steam
				06					06: 0.6MPa example: 1: 1MPa
					C1				-40 ~ 80 °C (normal temperature)
					C2				80 ~ 200 °C (Medium temperature)
					C3				200~ 700 °C (high temperature)
					C4				-200~ -40 °C (low temperature)
						F			Pulse output
						A			4-20mA output
						AH			4-20mA+HART agreement
							H		Hartz alloy C
							S4		304SS
							S6		316L
								S	No explosion-proof
								E	Explosion-proof type
								G	flameproof