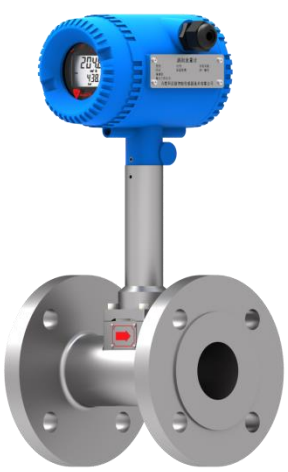
VFM60 Vortex Flow Meter

VFM60 is a powerful flow meter utilizing “Karman vortex” theory, which can meet the requirement of measuring the flow rate of various fluids such as gas, steam and liquid. The product uses the VFM60 transmitter technology, which provides with the excellent signal processing capability and enhance the vortex metering technology to a new level, which means it has lower measuring limit, better stability and accuracy. The unique dual-sensor design and special signal processing method has also ensured a better anti-vibration by eliminating the vibration signals to provide more reliable performance and lower measurement limit. The VFM60 platform is also an open platform, which means we can keep on upgrading its function according to customer’s unique requirement, and make the product a highly custom-orientation product.

- Sensor design that free from maintenance.
- Self-diagnose function, ensure easier trouble-shooting.
- Unique dual sensor technology excellent in anti-vibration.
- Self density calculation function is optional, can calculate density and mass flow rate without mass flow computer. Can output mass flow rate, temperature and pressure by working with separate RTD and pressure transmitter.
- Muti-variable version with built-in RTD and pressure sensor to measure standard/mass flow directly and display flow rate, temperature, pressure, mass flow rate and density as requires.
- Unit selectable function, meet different requirement from different area.
- Blue tooth function optional, can read flow rate and other data on COMATE APP with and smart phone or pad.
- Password can be set to protect setting model, easier for device management.

- VFM60N Standard type digital vortex meter

(without temperature&pressure compensation)



- VFM60MV Multi-variable Vortex Meter

(standard type support T≤ 150°)

- VFM60MV Multi-variable Vortex Meter

(high temperature version support 250° C＜T≤350° C)

2. Specification

1) Process Fluids:

Used in liquid, gas, and steam applications. Fluids must be homogeneous and single-phase.

2) Line Sizes:

The wafer and flanged type cover line sizes as below.

1”, 1.5”, 2”, 2.5”,3”, 4”, 5”, 6”, 8”,10” ,12”,

(DN25, DN40, DN50, DN65, DN80, DN100, DN125, DN150, DN200, DN250, DN300)

The insertion type covers DN200~1000.

Any requirement on other size, please check with our sales or engineers

3) Process connection:

Flange, wafer, insertion.DN, ANSI, JIS, DIN Standard flanges are optional

4) Displayer:

Integral or remote.3 buttons control. 2 lines LCD displayer.

1st line has 5 digits to display velocity, or mass flow or volume flow or frequency or temperature or pressure

2nd line has 8 digits to displayer total flow

A small extra line above 1st line will indicate what parameter being displayed in 1st line.

Note：The display can only display metric units, so when customer select Britain or US units, the display will show number only, but will not show the units

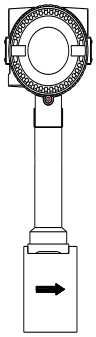
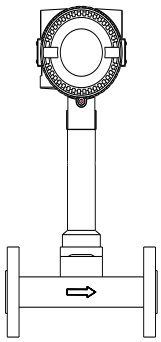
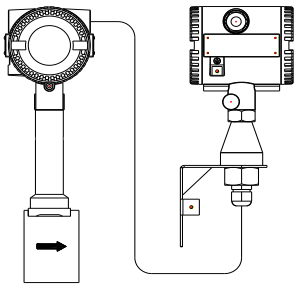
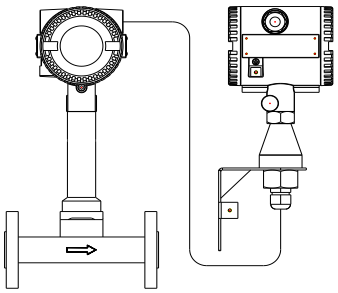
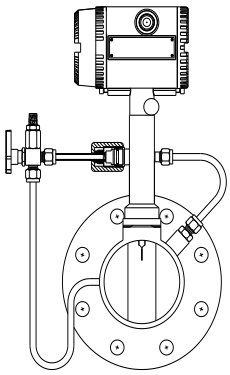
Display

5) Measureable parameter

Standard version: Volume flow rate in pipe, velocity (Can measure mass flow rate, temperature and pressure if wired to separate RTD and pressure transmitter.)

Muti-variable version: Mass flow rate, volume flow rate in standard condition, temperature, pressure, volume flow rate in pipe, velocity.

Product description

<table>
<tr>
<td>Wafertype
 
Flange type
  </td>
<td>- Remote mount
 
- Remote mount
  </td>
<td>VFM60MV
  </td>
</tr>
</table>

Process connection	Flange	DN15~DN300
	Wafer	DN15~DN300

Sensor		Anti-vibration vortex sensor
Medium temperature	Standard	–40℃~150℃
	Medium	-40℃~250℃
	High	–40℃~350℃
Power supply	4~20mA 2 wise system	13.5~42V
	VFM60MV with4~20mA(2 wire)	15.5~42V
	Modbus RTU	Current Iq＜9mA 13.4 ~42V
Diagnosis		support
Display		LED displayer
External FRAM		support
Saturated /superheated steam measurement		support
Natural gas/Biogas, ect		Support
Communication		HART(V5、V7)/ Modbus-RTU/ Pulse
Explosive proof		Explosive proof

Specification

Flow rate (m3/h)	Gas/steam	±1% RD（Re ≥ 20000）
		±2% RD（10000 < Re < 20000）
	Liquid	±0.75% RD（Re ≥ 20000）
		±2% RD（10000 < Re < 20000）
Mass flow（kg/h）	Gas/steam	±1.5% RD（Re ≥ 20000）
		±2.5% RD（10000 < Re < 20000）
Repeatability		±0.3%
Gas turndown ratio		1:30
Steam turndown ratio		1:35
Liquid turndown ratio		1:10
Upstream/Downstream requires		$15\times D/5\times D$
Viscosity allowance		$DN15 \le 4mPas$
		$DN25 \le 5mPas$
		$DN40 \sim DN300 \le 7mPas$

- Repeatability

Volume flow	±0.3%

Mass flow	±0.3%
Temperature	±0.05 ℃
Pressure	±0.05% FS

- Measurement range

Medium	Measurable Min limits	Measurable Max limits	Reference
Gas	6m/s，DN15、DN20	60m/s	T=25℃， P=101.325Kpa Gas calibration
	4m/s，DN25、DN32		
	2m/s，DN40~DN300		
Steam	6m/s，DN15、DN20	70m/s (standard) DN15、DN20 80 m/s（external）） DN25 、 DN32 120 m/s（external）） other 180m/s（external）	T=25℃， P=101.325Kpa Gas calibration
	4m/s，DN25、DN32		
	2m/s，DN40~DN300		
	1m/s，（external） DN40~DN300		
Liquid	0.3m/s	7m/s	T=25℃， P=101.325Kpa Gas calibration

- Output signal

Pulse, high level ≥ 5V, low level<1V，50% duty ratio

4~20mA(HART@4~20mA)

ModBus-RTU RS485

- Pressure allowance

1.6MPa、2.5MPa、4.0MPafor option, VFM60N support up to 6.3Mpa.

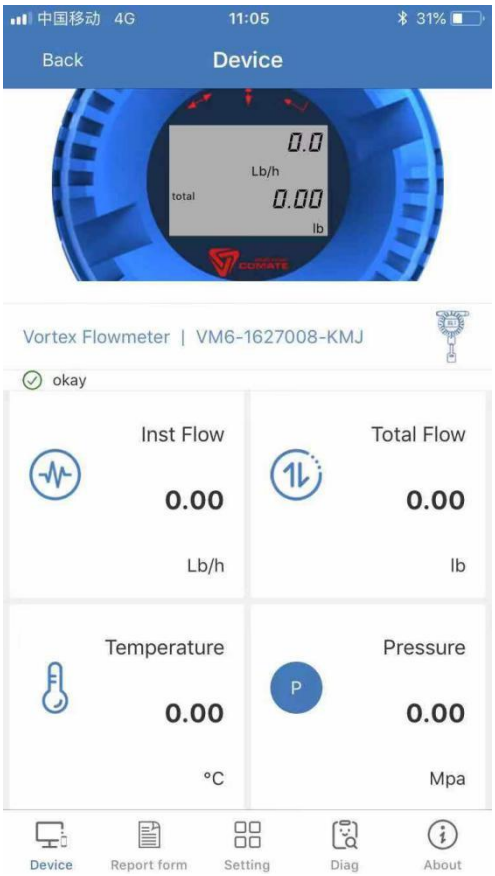
- Anti-vibration

Medium	Vibration	Vibration type	Vibration direction	velocity
Gas/steam	0.5g	punch	Vertical to the pipeline	No flow or velocity ＞ 6m/s
	0.5g	Circle time	Vertical to the pipeline	
Liquid	1.0g	punch	Vertical to the pipeline	No flow or velocity ＞ 0.7m/s
	1.0g	Circle time	Vertical to the pipeline	

Remark 1）gas/steam reference to conditions under （T=25℃，P=101.325Kpa）tests；2）liquid tests reference to conditions（T=25℃，P=101.325Kpa).

COMATE APP

Blue tooth function is optional to all COMATE products. Customers can read all data of the meter in COMATE APP on an cellphone or pad. The signal is valid within about 5 meters in front of the meter.



COMATE APP interface

Gas/Steam measuring range

Table 1 gas measuring range

Size mm	Range m3/h	Output Hz range
15	3.8-38	347-3600
20	6.8-68	240-3000
25	7.1-106	150-2500
32	11.6-188	100-1900
40	9-294	40-1450
50	14-460	35-1200
65	24-776	30-1000
80	36-1175	25-770
100	56-1836	20-650

125	88-2870	15-520
150	127-3815	12-400
200	226-6782	10-310
250	353-10598	8-230
300	508-14000	6-170

Table reference to conditions: ((T=25℃,P=0.1MPa, ρ=1.205kg/m^3 , $v=15\times10^{-6}m^2/s$)

Table 2 saturated steam measuring range——standard

	Standard Unit： kg/h													
Pressure	DN15		DN20		DN25		DN32		DN40		DN50		DN65	
MpaG	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
0.05	1.2	14.1	2.1	25.0	2.2	39.1	3.7	64.0	2.9	100.0	4.4633	156.21	8	264
0.1	2.3	26.6	4.0	47.2	4.2	73.8	6.9	120.9	5.4	188.9	8.4322	295.13	14	499
0.2	4.4	51.4	7.8	91.4	8.2	142.7	13.4	233.9	10.4	365.4	16.314	570.97	28	965
0.3	6.4	74.4	11.3	132.2	11.8	206.6	19.3	338.6	15.1	529.0	23.616	826.55	40	1397
0.4	8.3	97.2	14.8	172.8	15.4	270.0	25.3	442.4	19.8	691.3	30.862	1080.2	52	1825
0.5	10.2	119.2	18.2	211.9	18.9	331.1	31.0	542.5	24.2	847.6	37.839	1324.4	64	2238
0.6	12.1	141.6	21.6	251.7	22.5	393.3	36.8	644.3	28.8	1006.7	44.944	1573	76	2658
0.8	16.1	187.7	28.6	333.6	29.8	521.3	48.8	854.1	38.1	1334.5	59.576	2085.2	101	3524
1	19.7	229.6	35.0	408.1	36.4	637.7	59.7	1044.8	46.6	1632.5	72.881	2550.8	123	4311
1.5	28.8	336.0	51.2	597.3	53.3	933.2	87.4	1529.0	68.3	2389.0	106.65	3732.8	180	6308
2	38.8	452.5	68.9	804.4	71.8	1256.9	117.7	2059.3	91.9	3217.6	143.64	5027.5	243	8497
2.5	47.8	557.5	84.9	991.1	88.5	1548.6	145.0	2537.1	113.3	3964.3	176.98	6194.2	299	10468
3	57.4	669.6	102.0	1190.4	106.3	1860.0	174.1	3047.4	136.0	4761.6	212.57	7440	359	12574
4	77.5	904.5	137.8	1608.0	143.6	2512.5	235.2	4116.5	183.8	6432.1	287.15	10050	485	16985
	Standard Unit： T/h													
Pressure	DN80		DN100		DN125		DN150		DN200		DN250		DN300	
MpaG	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
0.05	0.01	0.40	0.02	0.62	0.03	0.98	0.04	1.41	0.07	2.50	0.11	3.91	0.16	5.62
0.1	0.02	0.76	0.03	1.18	0.05	1.84	0.08	2.66	0.13	4.72	0.21	7.38	0.30	10.62
0.2	0.04	1.46	0.07	2.28	0.10	3.57	0.15	5.14	0.26	9.14	0.41	14.27	0.59	20.56
0.3	0.06	2.12	0.09	3.31	0.15	5.17	0.21	7.44	0.38	13.22	0.59	20.66	0.85	29.76
0.4	0.08	2.77	0.12	4.32	0.19	6.75	0.28	9.72	0.49	17.28	0.77	27.00	1.11	38.89
0.5	0.10	3.39	0.15	5.30	0.24	8.28	0.34	11.92	0.61	21.19	0.95	33.11	1.36	47.68
0.6	0.12	4.03	0.18	6.29	0.28	9.83	0.40	14.16	0.72	25.17	1.12	39.33	1.62	56.63
0.8	0.15	5.34	0.24	8.34	0.37	13.03	0.54	18.77	0.95	33.36	1.49	52.13	2.14	75.07
1	0.19	6.53	0.29	10.20	0.46	15.94	0.66	22.96	1.17	40.81	1.82	63.77	2.62	91.83
1.5	0.27	9.56	0.43	14.93	0.67	23.33	0.96	33.60	1.71	59.73	2.67	93.32	3.84	134.38
2	0.37	12.87	0.57	20.11	0.90	31.42	1.29	45.25	2.30	80.44	3.59	125.69	5.17	180.99
2.5	0.45	15.86	0.71	24.78	1.11	38.71	1.59	55.75	2.83	99.11	4.42	154.86	6.37	222.99
3	0.54	19.05	0.85	29.76	1.33	46.50	1.91	66.96	3.40	119.04	5.31	186.00	7.65	267.84

4	0.74	25.73	1.15	40.20	1.79	62.81	2.58	90.45	4.59	160.80	7.18	251.25	10.34	361.81

Table 3 saturated steam measuring range——external

	External Unit：kg/h													
Pressure	DN15		DN20		DN25		DN32		DN40		DN50		DN65	
MpaG	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
0.05	1.205	16.07	2.142	28.56	2.232	66.95	3.656	109.7	2.856	257.1	4.463	401.7	7.543	678.9
0.1	2.277	30.36	4.047	53.97	4.216	126.5	6.908	207.2	5.397	485.7	8.432	758.9	14.25	1283
0.2	4.405	58.73	7.831	104.4	8.157	244.7	13.36	400.9	10.44	939.7	16.31	1468	27.57	2481
0.3	6.376	85.02	11.34	151.1	11.81	354.2	19.35	580.4	15.11	1360	23.62	2125	39.91	3592
0.4	8.333	111.1	14.81	197.5	15.43	462.9	25.28	758.5	19.75	1778	30.86	2778	52.16	4694
0.5	10.22	136.2	18.16	242.2	18.92	567.6	31	929.9	24.22	2180	37.84	3406	63.95	5755
0.6	12.13	161.8	21.57	287.6	22.47	674.2	36.82	1105	28.76	2589	44.94	4045	75.95	6836
0.8	16.09	214.5	28.6	381.3	29.79	893.6	48.8	1464	38.13	3432	59.58	5362	100.7	9062
1	19.68	262.4	34.98	466.4	36.44	1093	59.7	1791	46.64	4198	72.88	6559	123.2	11085
1.5	28.8	383.9	51.19	682.6	53.33	1600	87.37	2621	68.26	6143	106.7	9599	180.2	16222
2	38.78	517.1	68.95	919.3	71.82	2155	117.7	3530	91.93	8274	143.6	12928	242.8	21848
2.5	47.78	637.1	84.95	1133	88.49	2655	145	4349	113.3	10194	177	15928	299.1	26918
3	57.39	765.3	102	1360	106.3	3189	174.1	5224	136	12244	212.6	19131	359.2	32332
4	77.53	1034	137.8	1838	143.6	4307	235.2	7057	183.8	16540	287.1	25843	485.3	43675
External Unit：T/h														
Pressure	DN80		DN100		DN125		DN150		DN200		DN250		DN300	
MpaG	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
0.05	0.011	1.028	0.018	1.607	0.028	2.511	0.04	3.615	0.071	6.427	0.112	10.04	0.161	14.46
0.1	0.022	1.943	0.034	3.036	0.053	4.743	0.076	6.83	0.135	12.14	0.211	18.97	0.304	27.32
0.2	0.042	3.759	0.065	5.873	0.102	9.176	0.147	13.21	0.261	23.49	0.408	36.71	0.587	52.86
0.3	0.06	5.441	0.094	8.502	0.148	13.28	0.213	19.13	0.378	34.01	0.59	53.14	0.85	76.52
0.4	0.079	7.111	0.123	11.11	0.193	17.36	0.278	25	0.494	44.44	0.772	69.44	1.111	99.99
0.5	0.097	8.718	0.151	13.62	0.236	21.28	0.341	30.65	0.605	54.49	0.946	85.14	1.362	122.6
0.6	0.115	10.35	0.18	16.18	0.281	25.28	0.404	36.4	0.719	64.72	1.124	101.1	1.618	145.6
0.8	0.153	13.73	0.238	21.45	0.372	33.51	0.536	48.26	0.953	85.79	1.489	134	2.145	193
1	0.187	16.79	0.292	26.24	0.456	41	0.656	59.03	1.166	104.9	1.822	164	2.624	236.1
1.5	0.273	24.57	0.427	38.39	0.667	59.99	0.96	86.39	1.706	153.6	2.666	240	3.839	345.6
2	0.368	33.1	0.575	51.71	0.898	80.8	1.293	116.4	2.298	206.8	3.591	323.2	5.171	465.4
2.5	0.453	40.78	0.708	63.71	1.106	99.55	1.593	143.4	2.832	254.8	4.424	398.2	6.371	573.4
3	0.544	48.98	0.85	76.53	1.329	119.6	1.913	172.2	3.401	306.1	5.314	478.3	7.653	688.7
4	0.735	66.16	1.149	103.4	1.795	161.5	2.584	232.6	4.594	413.5	7.179	646.1	10.34	930.4

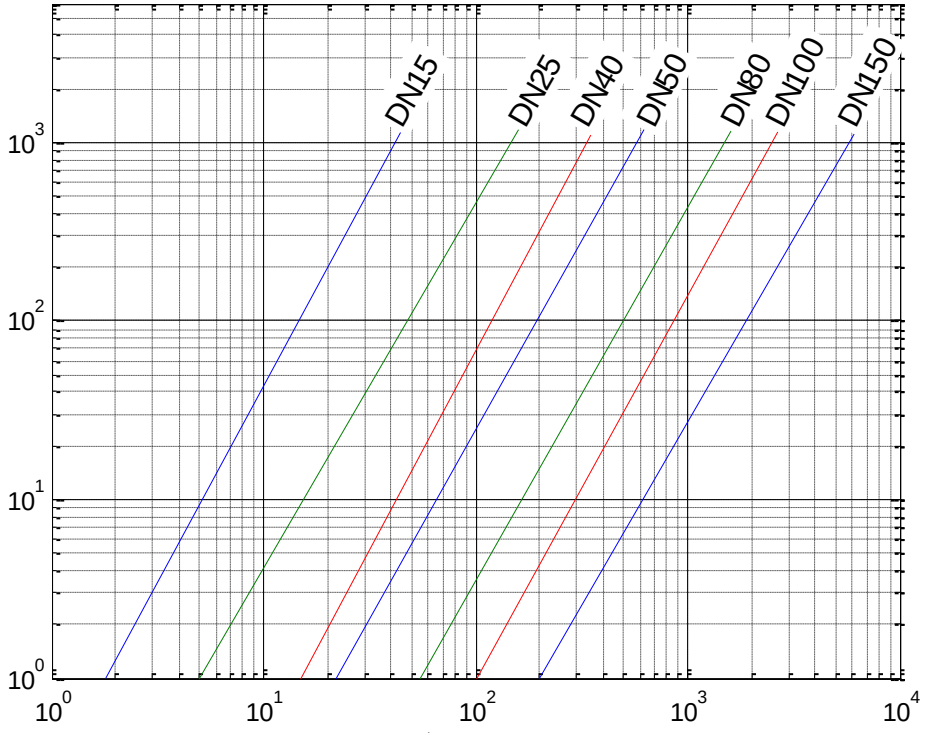
- Gas/steam pressure drop calculation

Gas/steam pressure drop calculation formula： $\Delta P=\frac{C\times\rho}{100}$

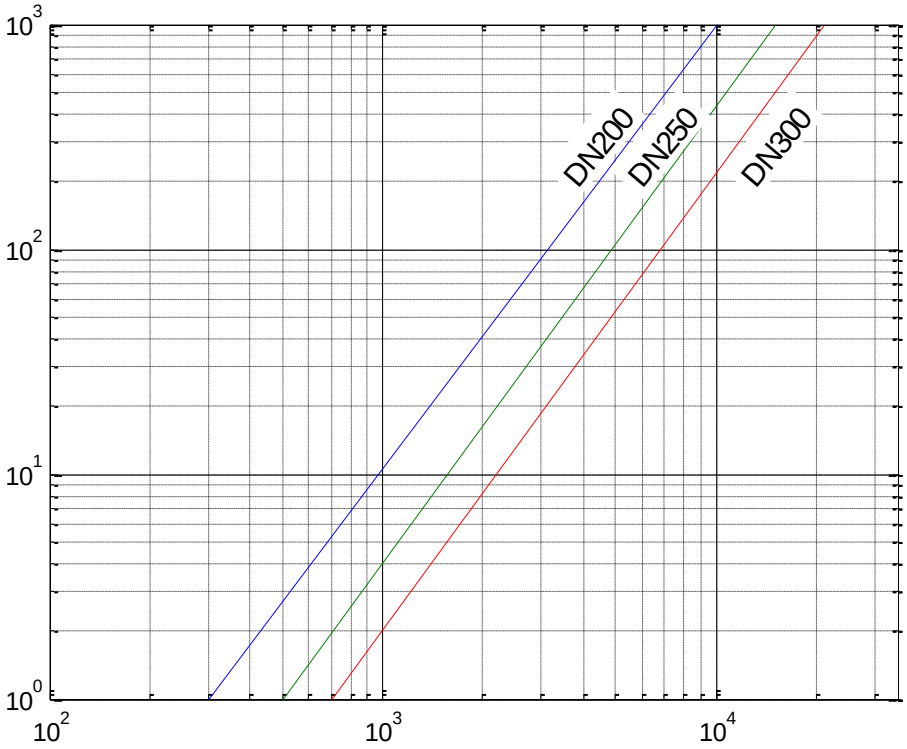
ΔP： Kpa

ρ: kg/m^3

C ： pressure drop factor(picture1/picture 2)



Picture1, Flow m3/hr, DN15~DN150



Picture1, Flow m3/hr, DN15~DN150

Liquid measuring range

Table 2 Liquid measuring range

Size mm	Range m3/h	Output Hz range
15	0．2-4.5	30-480
20	0.4-8	23-350
25	0.5-12	12-280
32	0.9-20	10-230
40	1.4-31.6	8-180
50	2-50	6-140
65	3.6-84	4-92
80	5.5-127	3.8-90
100	8.5-198	3.5-80
125	13-310	3.0-70
150	19-445	2.2-50
200	34-790	1.8-42
250	53-1236	1.5-35
300	76-1780	1.2-30

Reference conditions:(T=25℃， P=0.1Mpa, ρ=1000kg/m^3， $v=1.0\times10^{-6}m^2/s$)

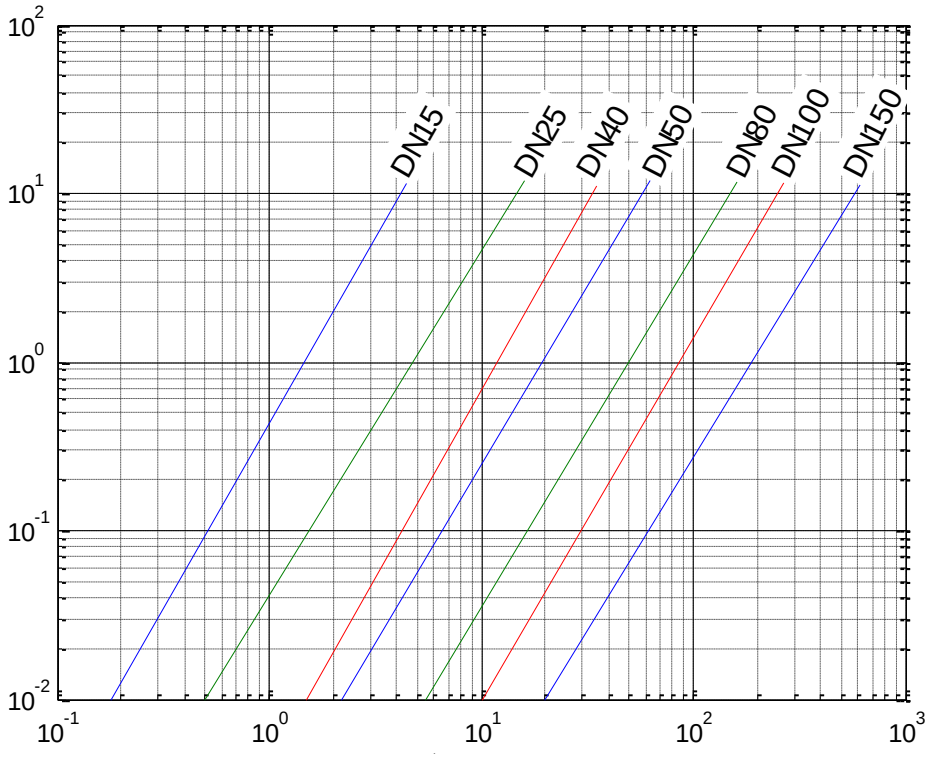
- Liquid pressure drop calculation

Liquid drop calculation formula： $\Delta P = \frac{C \times \rho}{100}$

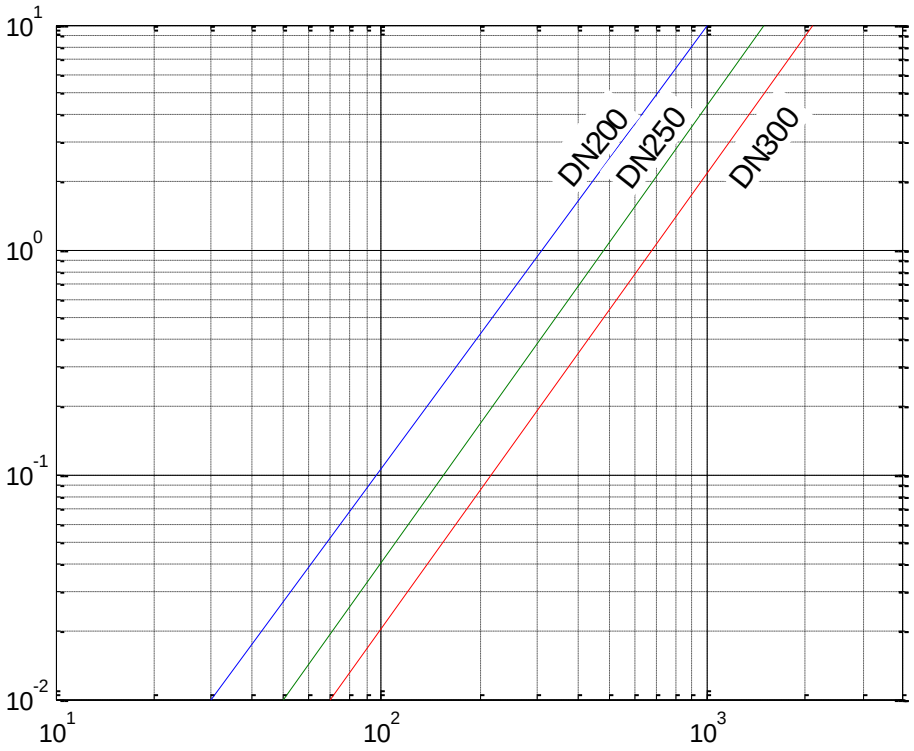
ΔP： Kpa

ρ: kg/m^3

C： pressure drop factor(picture3/picture 4)



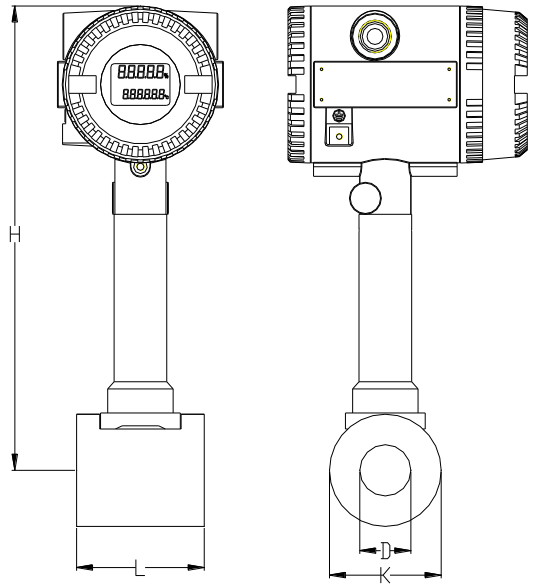
Picture 3, flow m3/hr, Liquid DN15~DN150 pressure drop factor



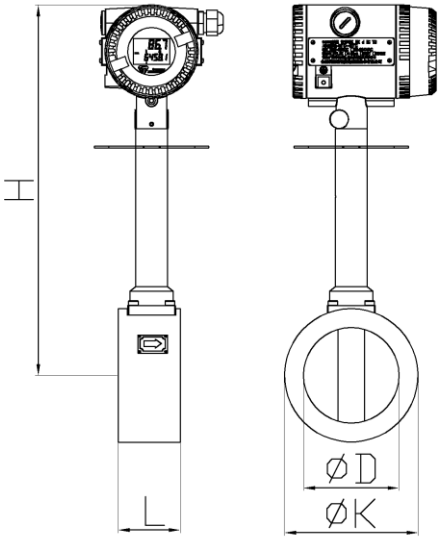
Picture 4, flow m3/hr, Liquid DN200~DN300 pressure drop factor

Dimension

1) Size and dimension for wafer type



Wafer(in 150°C)



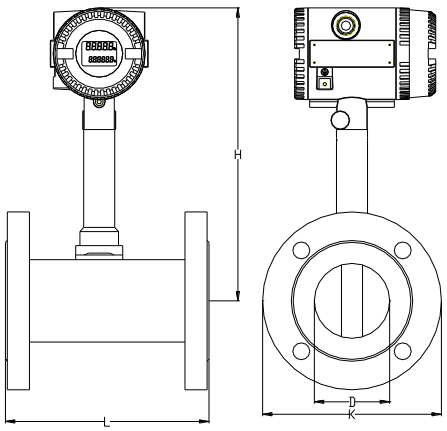
Wafer(in 250°C)

Size	ID	(Pipe O/D)K	Pipe length L	Flange screw hole distance W	Flange thickness C	Screw hole dia m	Screw QTY n	Flange O/D K	150℃ Height H	250℃ Height H
15	15	75	65	100	18	14	4	130	293.5	354.5
20	20	75	65	100	18	14	4	130	291	352
25	25	75	65	100	18	14	4	130	288.5	349.5
32	32	80	65	120	20	14	4	145	292.8	353.8
40	40	84	65	120	20	14	4	145	295.8	356.8
50	50	94	65	132	22	18	4	160	301	362
65	65	105	65	144	24	18	4	180	308.5	369.5
80	80	120	65	160	24	18	6	192	316	377
100	100	140	90	190	24	18	8	230	327	388
125	125	165	65	210	26	18	8	242	340.5	401.5
150	150	190	65	240	28	22	8	280	353	414
200	200	240	85	296	28	22	12	335	378	439
250	250	290	100	354	28	22	12	405	404	465
300	300	340	120	412	30	22	12	460	429	490

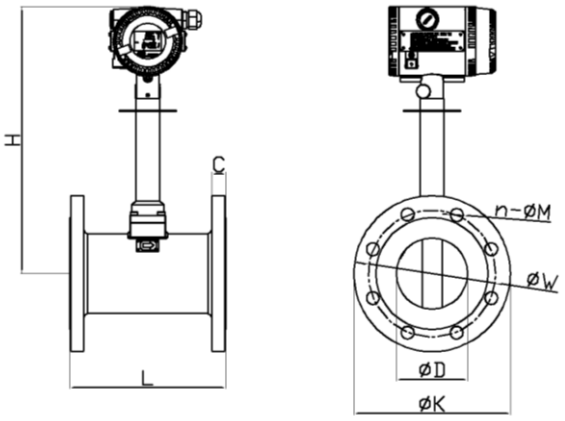
Remark: The flange O/D, screw holes distance, flange thickness, screw holes diameter and screw qty are for the counter flanges, unit in mm.

Counter flanges, screw and bolts, gaskets are usually along with package except customer do not need them.

2)Size and dimension for flanged type



Flange(in 150°C)



Flange(in 250°C)

ANSI/ASME-CLASS150

Size	ID	Pipe	Pipe	Flange	Flange	Screw	Screw	150℃	250℃

		O/D K	length L	screw hole distance W	thickness C	hole dia m	QTY n	Height H	Height H
15	15	90	180	60.3	11.6	15.9	4	301.5	362.5
20	20	100	180	69.9	13.2	15.9	4	299	360
25	25	110	180	79.4	14.7	15.9	4	295.5	356.5
32	32	117.3	180	88.9	16.3	15.9	4	300.5	361.5
40	40	127	180	98.4	17.9	15.9	4	302.5	363.5
50	50	152.4	180	120.7	19.5	19	4	307	368
65	65	180	200	139.7	22.7	19	4	314	375
80	80	190.5	200	152.4	24.3	19	4	326	387
100	100	230	200	190.5	24.3	19	8	336	397
125	125	255	220	215.9	24.3	22.2	8	345	406
150	150	280	220	241.3	25.9	22.2	8	360	421
200	200	345	220	298.5	29	22.2	8	385	446
250	250	406.4	250	362.0	30.6	25.4	12	412.7	473.5
300	300	485	300	431.8	32.2	25.4	12	445.4	506.4

Remark 1： L tolerance scope±3mm

ANSI/ASME-CLASS300

Size	ID	Pipe O/D K	Pipe length L	Flange screw hole distance W	Flange thickness C	Screw hole dia m	Screw QTY n	150℃ Height H	250℃ Height H
15	15	95.2	180	66.7	14.7	15.9	4	301.5	362.5
20	20	117.5	180	82.6	16.3	19	4	299	360
25	25	125	180	88.9	17.9	19	4	295.5	356.5
32	32	135	180	98.4	19.5	19	4	300.5	361.5
40	40	156	180	114.3	21.1	22.2	4	302.5	363.5
50	50	165.1	180	127	22.7	19	8	307	368
65	65	191	200	149.2	25.9	22.2	8	314	375
80	80	210	200	168.3	29	22.2	8	326	387
100	100	255	200	200	32.2	22.2	8	336	397
125	125	280	220	235	35.4	22.2	8	345	406
150	150	320	220	269.9	37	22.2	12	360	421
200	200	381	220	330.2	41.7	25.4	12	385	446
250	250	445	250	387.4	48.1	28.6	16	412.7	473.5
300	300	521	300	450.8	51.3	31.7	16	445.4	506.4

Remark 1： L tolerance scope±3mm

DIN PN16

Size	ID	Pipe O/D K	Pipe length L	Flange screw hole distance W	Flange thickness C	Screw hole dia m	Screw QTY n	150℃ Height H	250℃ Height H
15	15	95	180	65	14	14	4	301.5	362.5

20	20	105	180	75	16	14	4	299	360
25	25	115	180	85	16	14	4	295.5	356.5
32	32	140	180	100	18	18	4	300.5	361.5
40	40	150	180	110	18	18	4	302.5	363.5
50	50	165	180	125	20	18	4	307	368
65	65	185	200	145	20	18	8	314	375
80	80	200	200	160	20	18	8	326	387
100	100	220	200	180	22	18	8	336	397
125	125	250	220	210	22	18	8	345	406
150	150	285	220	240	24	22	8	360	421
200	200	340	220	295	26	22	12	385	446
250	250	405	250	355	29	26	12	412.7	473.5
300	300	460	300	410	32	26	12	445.4	506.4

Remark 1： L tolerance scope±3mm

PN25

Size	ID	Pipe O/D K	Pipe length L	Flange screw hole distance W	Flange thickness C	Screw hole dia m	Screw QTY n	150℃ Height H	250℃ Height H
15	15	95	180	65	14	14	4	301.5	362.5
20	20	105	180	75	16	14	4	299	360
25	25	115	180	85	16	14	4	295.5	356.5
32	32	140	180	100	18	18	4	300.5	361.5
40	40	150	180	110	18	18	4	302.5	363.5
50	50	165	180	125	20	18	4	307	368
65	65	185	200	145	22	18	8	314	375
80	80	200	200	160	24	18	8	326	387
100	100	235	200	190	26	22	8	336	397
125	125	270	220	220	28	26	8	345	406
150	150	300	220	250	30	26	8	360	421
200	200	360	220	310	32	26	12	385	446
250	250	425	250	370	35	30	12	412.7	473.5
300	300	485	300	430	38	30	16	445.4	506.4

Remark 1： L tolerance scope±3mm

DIN PN40

Size	ID	Pipe O/D K	Pipe length L	Flange screw hole distance W	Flange thickness C	Screw hole dia m	Screw QTY n	150℃ Height H	250℃ Height H
15	15	95	180	65	14	14	4	301.5	362.5
20	20	105	180	75	16	14	4	299	360
25	25	115	180	85	16	14	4	295.5	356.5
32	32	140	180	100	18	18	4	300.5	361.5
40	40	150	180	110	18	18	4	302.5	363.5

50	50	165	180	125	20	18	4	307	368
65	65	185	200	145	22	18	8	314	375
80	80	200	200	160	24	18	8	326	387
100	100	235	200	190	26	22	8	336	397
125	125	270	220	220	28	26	8	345	406
150	150	300	220	250	30	26	8	360	421
200	200	375	220	320	36	30	12	385	446
250	250	450	250	385	42	33	12	412.7	473.5
300	300	515	300	450	52	33	16	445.4	506.4

Remark 1： L tolerance scope±3mm

JIS10K

Size	ID	Pipe O/D K	Pipe length L	Flange screw hole distance W	Flange thickness C	Screw hole dia m	Screw QTY n	150℃ Height H	250℃ Height H
15	15	95	180	70	12	15	4	301.5	362.5
20	20	100	180	75	14	15	4	299	360
25	25	125	180	90	14	19	4	295.5	356.5
32	32	135	180	100	16	19	4	300.5	361.5
40	40	140	180	105	16	19	4	302.5	363.5
50	50	155	180	120	16	19	4	307	368
65	65	175	200	140	18	19	4	314	375
80	80	185	200	150	18	19	8	326	387
100	100	210	200	175	18	19	8	336	397
125	125	250	220	210	20	23	8	345	406
150	150	280	220	240	22	23	8	360	421
200	200	330	220	290	22	23	12	385	446
250	250	400	250	355	24	25	12	412.7	473.5
300	300	445	300	400	24	25	16	445.4	506.4

Remark 1： L tolerance scope±3mm

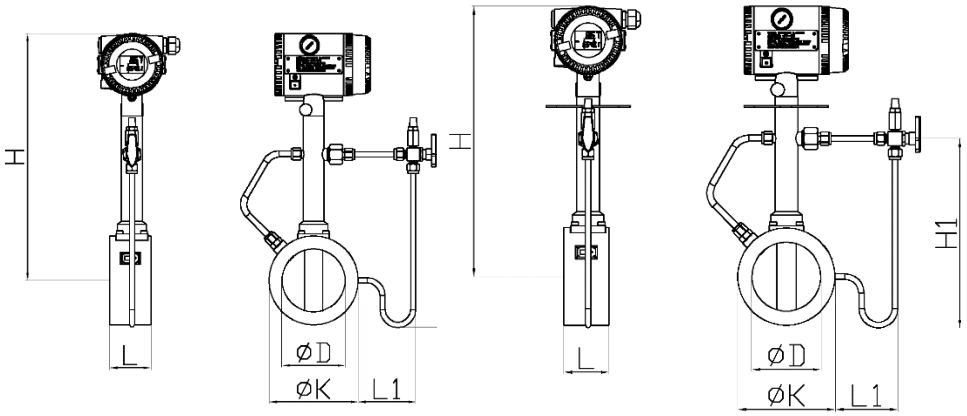
JIS20K

Size	ID	Pipe O/D K	Pipe length L	Flange screw hole distance W	Flange thickness C	Screw hole dia m	Screw QTY n	150℃ Height H	250℃ Height H
15	15	95	180	70	14	15	4	301.5	362.5
20	20	100	180	75	16	15	4	299	360
25	25	125	180	90	16	19	4	295.5	356.5
32	32	135	180	100	18	19	4	300.5	361.5
40	40	140	180	105	18	19	4	302.5	363.5
50	50	155	180	120	18	19	8	307	368
65	65	175	200	140	20	19	8	314	375
80	80	200	200	160	22	23	8	326	387

100	100	225	200	185	24	23	8	336	397
125	125	270	220	225	26	25	8	345	406
150	150	305	220	260	28	25	12	360	421
200	200	350	220	305	30	25	12	385	446
250	250	430	250	380	34	27	12	412.7	473.5
300	300	480	300	430	36	27	16	445.4	506.4

Remark 1： L tolerance scope±3mm

3) **Size and dimension for multi-variable wafer type**



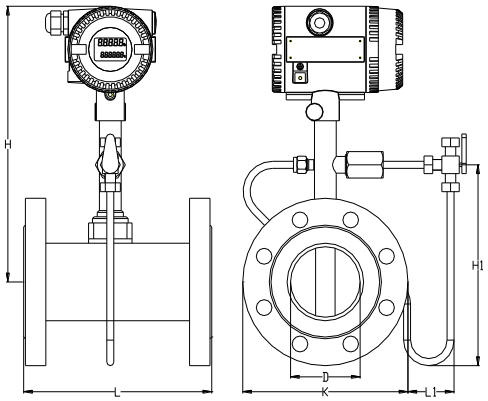
in 150°C in 250°C

Wafer multi-variable type

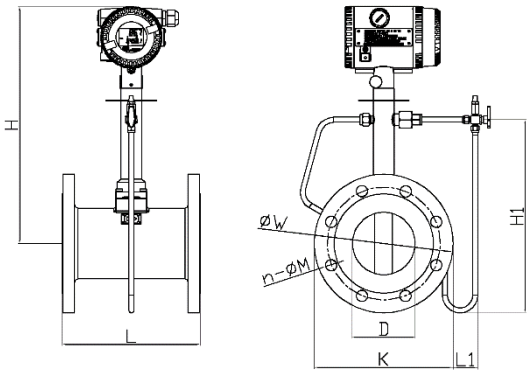
Size	ID	Pipe O/D K	Pipe length L	Flange screw hole distance W	Flange thickness C	Screw hole diam	Screw QTY n	Condenser width L1	150℃Height H	150℃condenser height H1	250℃ Height H	250℃condenser heightH1
15	15	75	65	100	18	14	4	86	293.5	151	354.5	212
20	20	75	65	100	18	14	4	83.5	291	148.5	352	209.5
25	25	75	65	100	18	14	4	86	288.5	146	349.5	207
32	32	80	65	120	20	14	4	87	292.8	152.8	353.8	213.8
40	40	84	65	120	20	14	4	89	295.8	157.8	356.8	218.8
50	50	94	65	132	22	18	4	89	301	168	362	229
65	65	105	65	144	24	18	4	91	308.5	181	369.5	242
80	80	120	65	160	24	18	6	111	316	206	377	267
100	100	140	90	190	24	18	8	90	327	217	388	278
125	125	165	65	210	26	18	8	86	340.5	243	401.5	304
150	150	190	65	240	28	22	8	86	353	268	414	329
200	200	240	85	296	28	22	12	106	378	318	439	379

250	250	290	100	354	28	22	12	106	404	369	465	430
300	300	340	120	412	30	22	12	106	429	419	490	480

4) **Size and dimension for multi-variable flanged type**



in 150°C



in 250°C

DIN PN16

Size	ID	Pipe O/D K	Pipe length L	Flange screw hole distance W	Flange thickness C	Screw hole diam	Screw QTY n	Condenser width L1	150℃ Height H	150℃ Condenser height H1	250℃ Height H	250℃condenser heightH1
15	15	95	180	65	14	14	4	76	301.5	168	362.5	229
20	20	105	180	75	16	14	4	68.5	299	170	360	231
25	25	115	180	85	16	14	4	66	295.5	172	356.5	233
32	32	140	180	100	18	18	4	57	300.5	189	361.5	250
40	40	150	180	110	18	18	4	56	302.5	196	363.5	257
50	50	165	180	125	20	18	4	53.5	307	208	368	269
65	65	185	200	145	20	18	8	51	314	225	375	286
80	80	200	200	160	20	18	8	51	326	245	387	306
100	100	220	200	180	22	18	8	50	336	265	397	326
125	125	250	220	210	22	18	8	43.5	345	289	406	350
150	150	285	220	240	24	22	8	38.5	360	322	421	383
200	200	340	220	295	26	22	12	56	385	382	446	443
250	250	405	250	355	29	26	12	48.5	412.7	432	473.5	493
300	300	460	300	410	32	26	12	46	445.4	497	506.4	558

Remark 1： L tolerance scope±3mm

DIN PN25

Size	ID	Pipe O/D K	Pipe length L	Flange screw hole distance W	Flange thickness C	Screw hole diam	Screw QTY n	Condenser width L1	150℃ Height H	150℃condenser height H1	250℃ Height H	250℃condenser heightH1
15	15	95	180	65	14	14	4	76	301.5	168	362.5	229
20	20	105	180	75	16	14	4	68.5	299	170	360	231
25	25	115	180	85	16	14	4	66	295.5	172	356.5	233
32	32	140	180	100	18	18	4	57	300.5	189	361.5	250
40	40	150	180	110	18	18	4	56	302.5	196	363.5	257
50	50	165	180	125	20	18	4	53.5	307	208	368	269
65	65	185	200	145	22	18	8	51	314	225	375	286
80	80	200	200	160	24	18	8	51	326	245	387	306
100	100	235	200	190	26	22	8	32.5	336	265	397	326
125	125	270	220	220	28	26	8	33.5	345	289	406	350
150	150	300	220	250	30	26	8	31	360	322	421	383
200	200	360	220	310	32	26	12	46	385	382	446	443
250	250	425	250	370	35	30	12	38.5	412.7	432	473.5	493
300	300	485	300	430	38	30	16	33.5	445.4	497	506.4	558

Remark 1： L tolerance scope±3mm

DIN PN40

Size	ID	Pipe O/D K	Pipe length L	Flange screw hole distance W	Flange thickness C	Screw hole diam	Screw QTY n	Condenser width L1	150℃ Height H	150℃ Condenser height H1	250℃ Height H	250℃condenser heightH1
15	15	95	180	65	14	14	4	76	301.5	168	362.5	229
20	20	105	180	75	16	14	4	68.5	299	170	360	231
25	25	115	180	85	16	14	4	66	295.5	172	356.5	233
32	32	140	180	100	18	18	4	57	300.5	189	361.5	250
40	40	150	180	110	18	18	4	56	302.5	196	363.5	257
50	50	165	180	125	20	18	4	53.5	307	208	368	269
65	65	185	200	145	22	18	8	51	314	225	375	286
80	80	200	200	160	24	18	8	51	326	245	387	306
100	100	235	200	190	26	22	8	32.5	336	265	397	326
125	125	270	220	220	28	26	8	33.5	345	289	406	350
150	150	300	220	250	30	26	8	31	360	322	421	383
200	200	375	220	320	36	30	12	39.5	385	382	446	443

250	250	450	250	385	42	33	12	36	412.7	432	473.5	493
300	300	515	300	430	52	33	16	18.5	445.4	497	506.4	558

Remark 1： L tolerance scope±3mm

ANSI/ASME-CLASS150

Size	ID	Pipe O/D K	Pipe length L	Flange screw hole distance W	Flange thickness C	Screw hole diam	Screw QTY n	Condenser width L1	150℃ Height H	150℃ Condenser height H1	250℃ Height H	250℃ Condenser heightH1
15	15	90	180	60.3	11.6	15.9	4	73.5	301.5	166.5	362.5	229
20	20	100	180	69.9	13.2	15.9	4	66	299	169	360	231
25	25	110	180	79.4	14.7	15.9	4	63.5	295.5	170.5	356.5	233
32	32	117.3	180	88.9	16.3	15.9	4	68	300.5	178	361.5	250
40	40	127	180	98.4	17.9	15.9	4	67.5	302.5	185	363.5	257
50	50	152.4	180	120.7	19.5	19	4	61	307	202	368	269
65	65	180	200	139.7	22.7	19	4	48.5	314	224	375	286
80	80	190.5	200	152.4	24.3	19	4	46	326	241	387	306
100	100	230	200	190.5	24.3	19	8	40	336	271	397	326
125	125	255	220	215.9	24.3	22.2	8	41	345	292.5	406	350
150	150	280	220	241.3	25.9	22.2	8	36	360	320	421	383
200	200	345	220	298.5	29	22.2	8	53.5	385	377.5	446	443
250	250	406.4	250	362.0	30.6	25.4	12	48	412.7	435.2	473.5	493
300	300	485	300	431.8	32.2	25.4	12	39.5	445.4	507.9	506.4	558

Remark 1： L tolerance scope±3mm

ANSI/ASME-CLASS300

Size	ID	Pipe O/D K	Pipe length L	Flange screw hole distance W	Flange thickness C	Screw hole diam	Screw QTY n	Condenser width L1	150℃ Height H	150℃ Condenser height H1	250℃ Height H	250℃ Condenser heightH1
15	15	95.2	180	66.7	14.7	15.9	4	71	301.5	166.5	362.5	229
20	20	117.5	180	82.6	16.3	19	4	57.2	299	169	360	231
25	25	125	180	88.9	17.9	19	4	51	295.5	170.5	356.5	233
32	32	135	180	98.4	19.5	19	4	59	300.5	178	361.5	250
40	40	156	180	114.3	21.1	22.2	4	53	302.5	185	363.5	257
50	50	165.1	180	127.0	22.7	19	8	54.7	307	202	368	269
65	65	191	200	149.2	25.9	22.2	8	43	314	224	375	286
80	80	210	200	168.3	29	22.2	8	36.3	326	241	387	306

100	100	255	200	200.0	32.2	22.2	8	28.5	336	271	397	326
125	125	280	220	235.0	35.4	22.2	8	28.5	345	292.5	406	350
150	150	320	220	269.9	37	22.2	12	16	360	320	421	383
200	200	381	222	330.2	41.7	25.4	12	35.5	385	377.5	446	443
250	250	445	250	387.3	48.1	28.6	16	28.7	412.7	435.2	473.5	493
300	300	521	300	450.8	51.3	31.7	16	21.5	445.4	507.9	506.4	558

Remark 1： L tolerance scope±3mm

JIS10K

Size	ID	Pipe O/D K	Pipe length L	Flange screw hole distance W	Flange thickness C	Screw hole diam	Screw QTY n	Condenser width L1	150℃ Height H	150℃condenser height H1	250℃ Height H	250℃condenser heightH1
15	15	95	180	70	12	15	4	76	301.5	166.5	362.5	229
20	20	100	180	75	14	15	4	66	299	169	360	231
25	25	125	180	90	14	19	4	61	295.5	170.5	356.5	233
32	32	135	180	100	16	19	4	54.5	300.5	178	361.5	250
40	40	140	180	105	16	19	4	56	302.5	185	363.5	257
50	50	155	180	120	16	19	4	56	307	202	368	269
65	65	175	200	140	18	19	4	56	314	224	375	286
80	80	185	200	150	18	19	8	42.5	326	241	387	306
100	100	210	200	175	18	19	8	55	336	271	397	326
125	125	250	220	210	20	23	8	43.5	345	292.5	406	350
150	150	280	220	240	22	23	8	41	360	320	421	383
200	200	330	220	290	22	23	12	61	385	377.5	446	443
250	250	400	250	355	24	25	12	51	412.7	435.2	473.5	493
300	300	445	300	400	24	25	16	53.5	445.4	507.9	506.4	558

Remark 1： L tolerance scope±3mm

JIS20K

Size	ID	Pipe O/D K	Pipe length L	Flange screw hole distance W	Flange thickness C	Screw hole diam	Screw QTY n	Condenser width L1	150℃ Height H	150℃condenser height H1	250℃ Height H	250℃condenser heightH1
15	15	95	180	70	14	15	4	76	301.5	168	362.5	229
20	20	100	180	75	16	15	4	66	299	170	360	231
25	25	125	180	90	16	19	4	61	295.5	172	356.5	233
32	32	135	180	100	18	19	4	54.5	300.5	189	361.5	250

40	40	140	180	105	18	19	4	56	302.5	196	363.5	257
50	50	155	180	120	18	19	8	56	307	208	368	269
65	65	175	200	140	20	19	8	56	314	225	375	286
80	80	200	200	160	22	23	8	35	326	245	387	306
100	100	225	200	185	24	23	8	47.5	336	265	397	326
125	125	270	220	225	26	25	8	33.5	345	289	406	350
150	150	305	220	260	28	25	12	28.5	360	322	421	383
200	200	350	220	305	30	25	12	51	385	382	446	443
250	250	430	250	380	34	27	12	36	412.7	432	473.5	493
300	300	480	300	430	36	27	16	36	445.4	497	506.4	558

Remark 1： L tolerance scope±3mm

5) Insertion type

The insertion type size are according to customer’s detail of applications

Ordering information

1) Mode number

The model number is usually VFM-1-23456789-XXX, please reference to the table below for what the model codes stand for.

Mode codes

1	**General model**	VFM60-N	Vortex flowmeter without integral RTD and pressure sensor	Standard	
		VFM60-MV	Vortex mass flowmeter with integral RTD and pressure sensor	Option	
2	**Transmitter Location**	T	Integral	Standard	Standard remote cable length is 5m, for longer cable, please let us know
		R	Remote	Option	
3	**Process connection**	0	Insertion	Option	Insertion for DN200~1000, wafer and flanged type for pipes smaller than 300mm
		1	Flanged	Standard	
		2	Wafer	Option	
		3	Downsized wafer	Option	
4	**Fluid type**	1	Liquid	Standard	If the fluid is steam, please advise if it is saturated or superheated
		2	Gas	Option	
		3	Steam	Option	
5	**Wetted part material**	1	OCr18Ni9(304)	Standard	For other materials, please advise your requirement.
		2	316	Option	
		Q	Other	Option	
6	**Pressure rating**	3	1.6 Mpa	Standard	
		4	2.5 Mpa	Option	
		5	4 Mpa	Option	
		6	6.3 Mpa	Option	
7	**Medium Temperature**	N	T≤150℃	Standard	If temperature is lower than 40 dgr C, please check with us.
		S	T≤250℃(wafer or flanged)	Option	
		H	T≤350℃ (wafer or flanged)	Option	
8	**Transmitter**	1	pulse/4~20mA	Standard	The HART signal is output though 4~20mA. MV stand for multi-variable version Option 2,4,6,8,9 require one week more for production
		2	pulse/HART@4~20mA	Option	
		3	Pulse/RS485	Option	
		4	pulse/ 4~20mA/RS485	Option	
		5	MV/pulse/4~20mA	Option	
		6	MV/pulse/HART@4~20mA	Option	
		7	MV/Pulse/RS485	Option	
		8	MV/pulse/ 4~20mA/RS485	Option	
		9	pulse/4~20mA/RS485/separate T&P	Option	
9	**Blue tooth**	Q	No Blue tooth	Standard	If need blue tooth, has to has RS485
		B	With blue tooth	Option	
10	**Cable grinder**	N	M20x1.5	Standard	
		Q	Other	Option	

	Pipe size	xxx	xxx		This 3 digits code indicates the inner diameter of the pipe, for example, 050 means DN50,

Example of a model selection

Application:
Saturate steam, process pressure 0.8Mpa.
Flow rate:800~4000kg/hr
DN100 (4") ANSI flanged process connection.
RS485+PULSE output, 24VDC power, integral displayer

Counter ordering information
In 0.8Mpa, the density of saturated steam is about 4.162kg/hr (170 degree C)
800 kg/hr = 192 m3/hr = 6.8m/s
4000 kg/hr = 961 m3/hr = 34m/s
The velocity is within our standard measurement range of 2~70m/s

Counter solution:
Model number:VFM60-N-T1313S9N100 or VFM60-M-T1313S7N100
ANSI flange, 0.8Mpa saturated steam, 2~70 m/s, temperature compensation and RTD required or chose multi-variable version.