

# Vortex flow meter



---

# Contents

Product description.....	1
Working principle.....	1
Features.....	2
Products.....	3
Technical parameter.....	4
Dimensions of flange clamped vortex flow meter.....	5
Flange connection type vortex flow meter size.....	6
Flow range table.....	7
LUGB Vortex flow meter Selection Table.....	8

## Product description

HBLUGB type vortex flow meter is widely used in petroleum, chemical, metallurgy, thermal, textile, paper and other industries for superheated steam, saturated steam, compressed air and general gases (oxygen, nitrogen, hydrogen, natural gas, gas, etc.), water and liquid ( Such as: water, gasoline, alcohol, benzene, etc.) measurement and control.

## Working principle

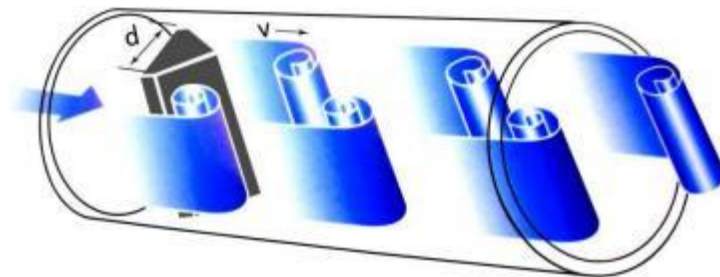


Figure 1: Working principle diagram of karman vortex street

Setting a triangular prism vortex generator in the flow meter, regular vortex will be generated at both the sides of triangular prism, which is called karman swirl. As showed on the drawing 1. 1,vortex are arranged regularly at the downstream of vortex generator. Suppose the vortex generation frequency is  $f$ , the average flow velocity of medium is  $v$ ,  $d$  is the width of the surface of triangular prism incident flow, and  $d$  for the nominal diameter of flow meter. Then we get the computation formula:

$$f = Sr \frac{\bar{V}}{(1 \sim 1.25d/D) d}$$

# Features

- ❖ Simple and firm structure, no moving parts, high reliability, very reliable for long-term operation.
- ❖ Simple installation and convenient maintenance.
- ❖ The detection sensor does not directly contact the measured medium, with stable performance and long service life.
- ❖ The output is a pulse signal proportional to the flow rate, no zero drift, and high accuracy.
- ❖ Wide measuring range, up to 1:10 range ratio.
- ❖ The pressure loss is small, the operating cost is low, and it is more energy-saving.
- ❖ Within a certain Reynolds number range, the output signal frequency is not affected by the fluid physical properties and composition changes. The meter coefficient is only related to the shape and size of the vortex generator. No compensation is required when measuring the fluid volume flow, and it is generally not necessary after changing accessories. Recalibrate the meter coefficient.
- ❖ Wide range of application, the flow of steam, gas and liquid can be measured.
- ❖ The inner diameter of the vortex flow sensor is 25-300mm (full tube)
- ❖ Insert type vortex flow sensor application inner diameter range is 350- 1200mm (Insert type)
- ❖ The accuracy of measuring liquid with full tube is 1%
- ❖ The accuracy of measuring steam and gas is 1.5%
- ❖ The accuracy of the liquid measurement is 2%
- ❖ The accuracy of measuring steam and gas is 2.5%
- ❖ The measured medium temperature is -20~ 150°C , -40~250°C , + 100~350°C (tube only). The output signal is three-wire voltage pulse, three-wire system 4-20mA, two-wire system 4-20mA。

# Products



①



②



③



④



⑤



⑥



⑦



⑧

① HBLUGB/S type flange card connection vortex flow meter

② HBLUGB/S type flange connection vortex flow meter

③ HBLUGB/S simple Insert type vortex flow meter

④ HBLUGB/S split vortex flow meter

⑤ HBLUGB/B flange connection vortex flow meter

⑥ HBLUGB/B type flange card connection vortex flow meter

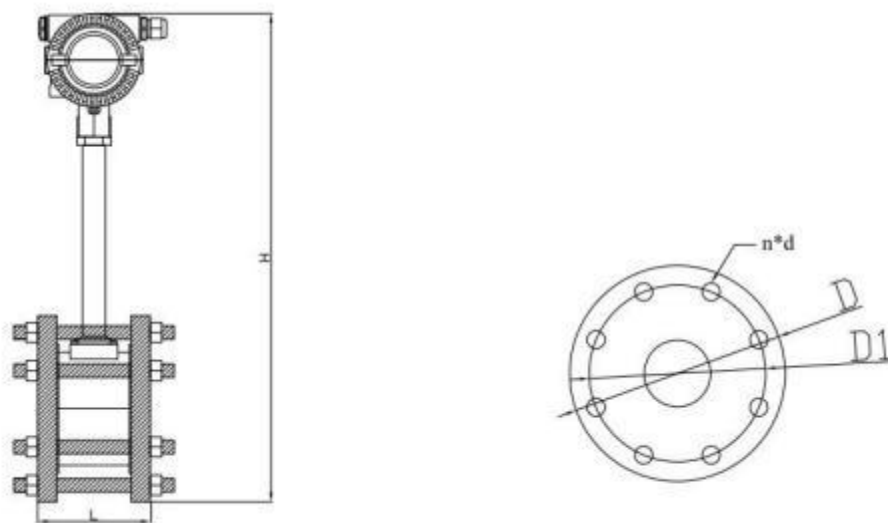
⑦ HBLUGB/B simple Insert type vortex flow meter

⑧ HBLUGB/B type flange ball valve vortex flow meter

# Technical parameter

Nominal diameter (mm)	25,40,50,65,80, 100, 125, 150,200,250,300 , (300~ 1000Insert type)
Nominal pressure (MPa)	DN25-DN200 4.0 (>4.0Agreement Supply) , DN250-DN300 1.6 (> 1.6Agreement Supply)
Medium temperature (°C)	Piezoelectric: -40~260, -40~320; Capacitive: -40~300, -40~400, -40~450 (order agreement)
Body material	1Cr18Ni9Ti , (Other material agreement supply)
Allow vibration acceleration	Piezoelectric: 0.2g Capacitive: 1.0~2.0g
Accuracy	± 1%R, ± 1.5%R, ± 1FS; Insert type type: ±2.5%R, ±2.5%FS
Extent	1:6~ 1:30
Supply voltage	Sensor: + 12V DC, +24V DC; Transmitter: + 12V DC, +24V DC; Battery-powered type: 3.6V battery
Output signal	Square wave pulse (excluding battery-powered type): high level ≥5V, low level ≤1V; current: 4~20mA
Pressure loss coefficient	Comply with JB/T9249 standard $C_d \leq 2.4$
Explosion- proof mark	Intrinsically safe type: Exd II ia CT2-T5 Flameproof type: Exd II CT2-T5
Protection class	Common type IP65 diving IP68
Environmental conditions	Temperature -20°C~55°C , relative humidity 5%~90%, atmospheric pressure 86~ 106kPa
Applicable medium	Gas, liquid, steam
Transmission distance	Three-wire pulse output type: ≤300m, two-wire standard current output type (4~20mA): load resistance ≤750Ω

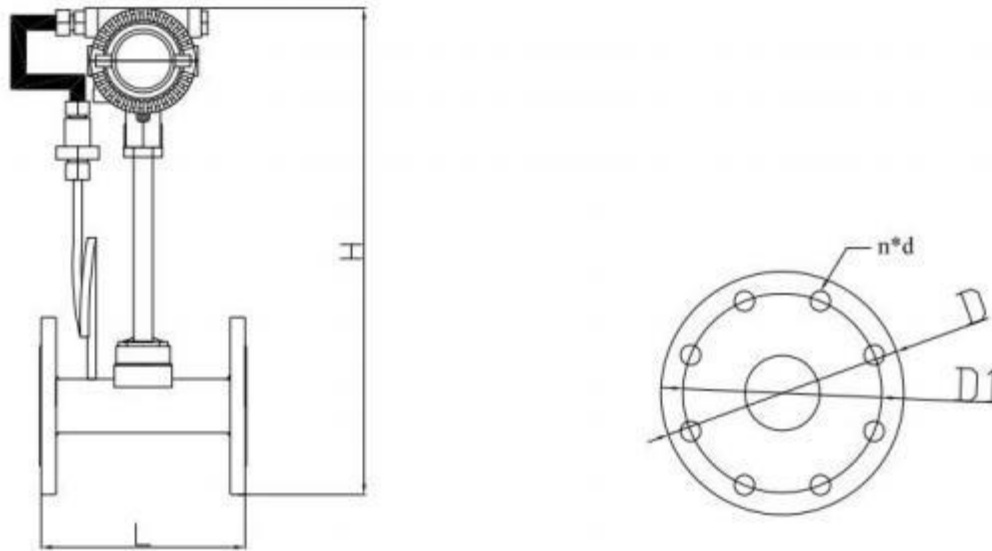
## Dimensions of flange clamped vortex flow meter



Size (mm)	15	20	25	32	40	50	65	80	100	125	150	200	250	300
L (mm)	95	95	95	114	114	117	117	117	136	151	170	190	205	220
H (mm)	460	460	460	480	490	500	515	530	550	570	600	650	710	760
D (mm)	125	125	125	145	145	160	180	195	215	245	280	335	405	460
D1 (mm)	100	100	100	120	120	125	145	160	180	210	240	295	355	410
N (pce)	4	4	4	4	4	4	4	8	8	8	8	12	12	12
d (mm)	14	14	14	14	14	18	18	18	18	18	22	22	26	26

**HGT20592 PN16, other flange standards can be customized, please inform before ordering.**

## Flange connection type vortex flow meter size



Size (mm)	15	20	25	32	40	50	65	80	100	125	150	200	250	300
L (mm)	180	180	180	180	180	180	200	200	200	220	220	220	250	300
H (mm)	416	423	431	448	456	470	488	501	525	552	584	636	696	749
D (mm)	95	105	115	140	150	165	185	200	220	250	285	340	405	460
D1 (mm)	65	75	85	100	110	125	145	160	180	210	240	295	355	410
N (mm)	4	4	4	4	4	4	8	8	8	8	8	12	12	12
d (mm)	14	14	14	18	18	18	18	18	18	18	22	22	26	26

The flange standard of this table is HGT20592 PN16, other flange standards can be customized, please inform before ordering.



## Flow range table

Caliber (mm)	Liquid		Gas	
	Range(m <sup>3</sup> /h)	Output frequency range (hz)	Measurement range (m <sup>3</sup> /h)	Output frequency range (hz)
15	0.3~6	30~585	2.8~15	275~1460
20	1~10	40~396	5.5~50	218~1982
25	1.6~16	25~325	8.5~70	172~1420
32	2~20	21~205	18~130	185~1340
40	2.5~25	10~200	22~220	140~1040
50	3.5~35	9~93	36~320	96~854
65	6.5~68	8~82	50~480	61~583
80	10~100	6~65	70~640	45~417
100	15~150	5~50	130~1100	43~367
125	27~275	5~47	200~1700	33~290
150	40~400	4~40	280~2240	27~221
200	80~800	3~33	580~4960	24~207
250	120~1200	3~26	970~8000	20~171
300	180~1800	2~22	1380~11000	17~136
(400)	180~3000	5.6~87	2750~27000	85~880
(500)	300~4500	5.6~88	4300~43000	85~880
(600)	450~6500	5.7~89	6100~61000	85~880
(800)	750~10000	5.7~88	11000~110000	85~880
(1000)	1200~17000	5.8~88	17000~170000	85~880
>(1000)	Agreement		Agreement	

**Note:** The normal flow range is the minimum and maximum flow, and the alternative flow is the maximum flow provided by the customer during model selection.

# LUGB Vortex flow meter Selection Table

Model											Explanation
HBLUGB	/	/	/	/	/	/	/	/	/	/	
Nominal diameter	15~3000										DN15-DN3000mm
Instrument type	A										Intelligent temperature and pressure compensation type, 24VDC, 4-20mA
	B										Intelligent temperature compensation type, 24VDC, 4-20mA
	C										Intelligent pressure compensation type, 24VDC, 4-20mA
	K										Intelligent field display type, 24VDC, 4-20mA
	N										Transmitter type, 24VDC, pulse output 4-20mA
Accuracy class	10										Accuracy 1.0%
	15										Accuracy 1.5%
	20										Insertion (liquid Accuracy 2.0%)
	25										Insertion (gas Accuracy 2.5%)
Material		S									304SS
		L									316L
Explosion-proof grade			N								Without
			E								Explosion-proof type (Ex d ia[ia Ga] q IIC T6 Gb)
Pressure Level				N							1.6MPa
				H(X)							High pressure customization(2.5MPa.4.0Mpa...)
Communication protocol								1			Without
								2			RS485/Modbus protocol
								3			Hart Agreement
Measuring medium									1		Liquid
									2		General gas
									3		Saturated Vapor
									4		Superheated steam
Rated temperature									1		Below 150°C
									2		Below 250°C
									3		Below 350°C
Connection method										1	Flange clamping type
										2	Flange connection type
										3	Simple insert type



*Survive by quality, seek development by integrity*

**Kaifeng Huabang Instrument Co., Ltd.**

KAIFENG HUABANG INSTRUMENT CO., LTD

Factory Address: North Section of Shanghe Avenue, Xiangfu District, Kaifeng City, Henan Province

Phone: 86-0371-26680208

Email: [info@hbmeter.cc](mailto:info@hbmeter.cc)

Website: <http://www.hbmeter.cc>