

# Klinger LUGB

## Vortex flowmeter

Klinger LUGB is a Vortex flow meter in industrial design for measuring liquid, gas or steam

### Principle

The vortex principle is based on sensing the vortex formation that occurs behind a body, which is inserted into a liquid or gas stream.

All Vortex flow meters thus have an obstruction called a "bluff body", which ensures that an alternating flow of vortices is formed. The distance from the center of one vortex to the next is called the wavelength, and is directly related to the diameter of the bluff body design.

In a Vortex flow meter, the bluff body and housing are designed so that the frequency of the vortices is directly proportional to the flow rate.

### Application

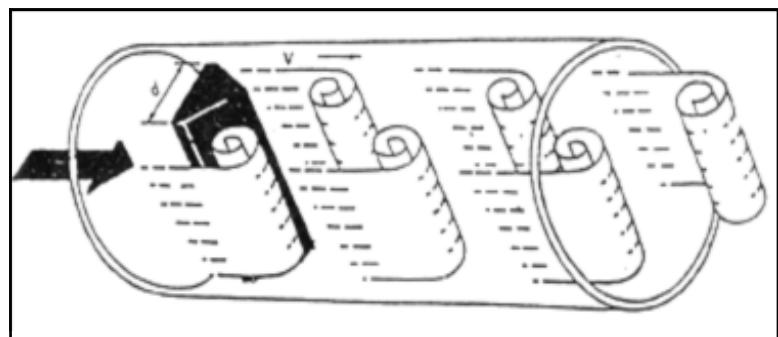
The Vortex principle makes no demands on electrical conductivity in the medium, which is why the principle for many tasks in liquid measurement is a good supplement to the magnetically inductive flow meter - for example for measuring solvents or liquids at extreme temperatures (such as cryogens down to -200°C).

The Vortex meter also acts as a gas and steam meter - with no change other than an adjustment of the transmitter gain - a setting that is usually made at the factory, but otherwise is simply a matter of moving a switch. The basic equation for the measurement principle does not include any 'media data', which is why you can wet calibrate all meters during manufacture and simply use a simple electronic adaptation to other media.

### Limitations

The limitation of the measuring principle lies in the ability to form vortices after the bluff body - ie a dependence on the viscosity and density of the liquid. In practice, this means that there must be more speed on the liquid before the vortices are formed, the higher the density / viscosity of the liquid.

Or in other words: The flow meter of the flow meter becomes smaller as the medium becomes heavier or thicker. It can be expressed using the Reynolds number, which must be > 4,000 before the vortices are formed.



### Klinger LUGB for liquid, gas and steam:

- Can be used for liquid, gas and steam
- Pipe dimensions from DN 15 to DN 300mm
- Accuracy better than 1% of measured value (liquid)
- Wetted parts in stainless steel
- Can be delivered with integrated pressure and temperature measurement

## Specifications

specifications	
Range	See table
Accuracy	±1.0% (væske) / ±1.5% (gas/damp)
Dimensions	DN 15mm til DN 300mm
Reference media	Water
Media	Liquid, gas or steam
Electrical	
Output	Pulse Analogue: 4~20mA, max load 300Ω.
Communication	RS485
Power Supply	24VDC ±15%
Interface	3-buttons for menu
Display	LCD / backlight
Compensation	Pressure: DN15...80 / PN25 DN100...200/PN16, >DN200 / PN10 Temperatur:e -20 til 350 °C
Mechanical	
Wetted parts	Stainless Steel (304 eller 316)
Transmitter	Aluminium / PU Coated
	Compact or seperated
Process Connection	Wafer Flange, EN 1092-1 or ASME B16.5



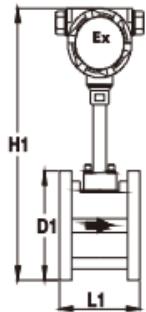
## Ranges

Diameter (mm)	(Inch)	Flow (m³/h)	
		Liquid	Gas
15	1/2"	1.2 to 6.2	5 to 25
20	3/4"	1.5 to 10	8 to 50
25	1"	1.6 to 16	10 to 70
40	1-1/2"	2.5 to 26	22 to 220
50	2"	3.5 to 38	36 to 320
65	2-1/2"	6.2 to 65	50 to 480
80	3"	10 to 100	70 to 640
100	4"	15 to 150	130 to 1100
125	5"	25 to 250	200 to 1700
150	6"	36 to 380	280 to 2240
200	8"	62 to 650	580 to 4960
250	10"	140 to 1400	970 to 8000
300	12"	200 to 2000	1380 to 11000

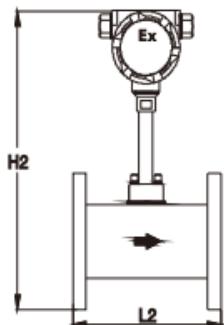
Note that the indication of measuring ranges is indicative, as it may vary with the viscosity of the medium

## Dimensions

1. Wafer connection

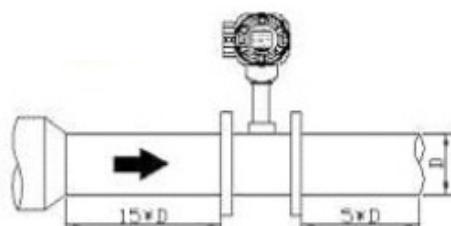


2. Flange type

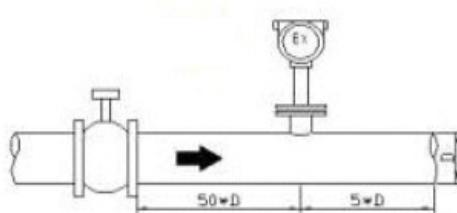


Items	H1*	D1	L1	H2*	L2
DN15	525	45	65	540	170
DN20	531	58	65	545	170
DN25	531	58	65	550	250
DN32	531	58	65	563	250
DN40	529	85	70	578	250
DN50	541	99	70	590	250
DN65	558	118	70	612	250
DN80	573	132	70	625	280
DN100	595	156	70	644	300
DN125	621	184	70	674	350
DN150	647	211	70	703	350
DN200	705	266	98	757	400
DN250	757	319	114	810	450
Dn300	808	370	130	860	500

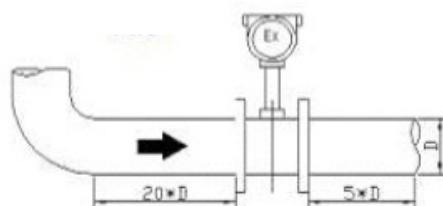
## Installation



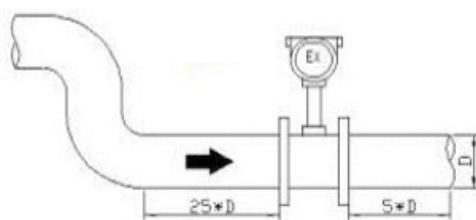
1. Straight pipe/reduction  $> 15 \times DN$



2. Shut off valve  $> 50 \times DN$



3. Single bend 90°  $> 20 \times DN$



4. Double bend 2x90°  $> 25 \times DN$

## Ordering

Model	Suffix Code								Description
LUGB-	①	②	③	④	⑤	⑥	⑦	⑧	Vortex Flowmeter
Fluid	L								Liquid
	G								Gas/Air
	S								Steam
Diameter	XXX								Stand for diameter 015: DN15; 050: DN50 100: DN100; 300: DN300
Structure	S								Compact type
	L	C							Fluid; liquid; 24V DC; 4-20mA / Pulse output; Digital display; Ex
		DT							24VDC, 4-20mA/Pulse; digital display; Temp. compensation only
		DP							24VDC, 4-20mA/Pulse; digital display; Pressure compensation only
Converter Type	DB								24VDC, 4-20mA/Pulse; digital display; Temp. and Pressure compensation
									1) Modbus RS485 is optional for C, V, D series
									2) Dual power (24V DC +Battery) is optional for C, V , D series
	Notice:								
Body Material	S4								SS304
	S6								SS316
Explosion Proof	BT								ExdIIBT6
									ExibIIC4
	NA								No explosion proof
Connection	WAF								Wafer, only with transmitter C
									D16: DIN PN16 Flange; D25: DIN PN25 Flange...
									A15: ANSI 150# Flange; A30: ANSI 300 # Flange...
	JXX								J10: JIS 10K Flange; J20: JIS 20K Flange...
Temperature	T1								-20...+100°C
	T2								-20...+250°C
	T3								-20...+350°C

Eksempel: LUGB ① S ② 100 ③ S ④ DB ⑤ S4 ⑥ CT ⑦ D16 ⑧ T2

- ① S: Steam application
- ② 100: DN100
- ③ S: Compact type with local display
- ④ DB: 24VDC, 4-20mA/Pulse; Temp. and Pressure compensation
- ⑤ S4: SS304 body material
- ⑥ CT: ExibIIC4
- ⑦ D16: Flange DIN PN16
- ⑧ T2:-20...+250°C

## Other flowmeters

Magnetic Inductive



VA flowmeters



Ultrasonic flowmeters

