

# VORTEX FLOW METER

SIL

PCEC

HART  
COMMUNICATION PROTOCOL

Ex

CE



## DESCRIPTION

The vortex flow meter is engineered for metering, measurement and control of most steam, gas and liquid flow for a very unique medium versatility, high stability and high reliability with no moving parts, simple structure and low failure rate.

## APPLICATIONS

- Boiler industry( Steam measurement)
- Compressed air industry
- Textile industry
- Paper Industry
- Heating industry
- Metallurgical industry plastics processing

## FEATURES

- No moving parts inside, easy installation and maintenance
- Digital filter amplifier with wider measurement range and better anti-interference performance
- Wide flow ratio up to 33 : 1
- High Accuracy up to  $\pm 0.2\%$  optionally
- Max temperature up to  $+420^\circ\text{C}$
- Inline and Insertion type for option
- Integrated and remote transmitter for option
- Power-off record function
- CE and calibration certificate
- The remote type supports pressure and temperature compensation

## TECHNICAL DATA

Diameter	DN15- DN700 (DB Type) ;1.5% accuracy			
	DN10- DN 500 (DA Type) ;1.0% accuracy			
	DN200- DN2000 (Insertion Type)			
Accuracy	Liquid: $\pm 1.0\%$ of rate		Gas and steam: $\pm 1.5\%$ of rate ( $\pm 1.0\%$ of rate is only for DA Type optional)	
Body Material	SS304		SS316	
Fluid Temp.	T1: $-20^\circ\text{C}\dots+100^\circ\text{C}$	T2: $-20^\circ\text{C}\dots+250^\circ\text{C}$	T3: $-20^\circ\text{C}\dots+300^\circ\text{C}$	T4: $-20^\circ\text{C}\dots+420^\circ\text{C}$
Ambient Temp.	$-10\dots+50^\circ\text{C}$			
Connection	Flange; wafer; thread; tri-clamp			
Protection Level	IP65; IP68			
Power supply	24 V DC and battery for option			
Communication	RS485; HART			
Output	4-20mA; Pulse			



DA- Compact Type

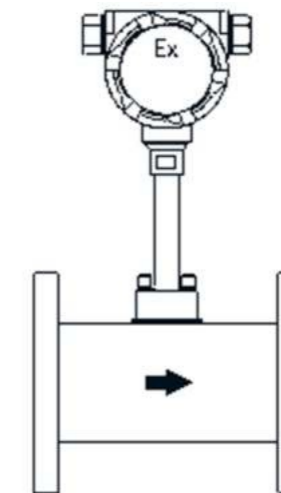
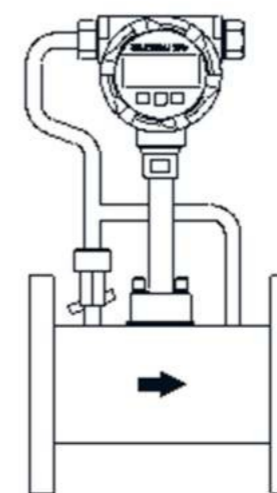


DB- Compact Type



DA- Remote Type

## TECHNICAL DRAWINGS



## MODEL SELECTION

Model	Suffix Code									Description
LUGB-	①	②	③	④	⑤	⑥	⑦	⑧	⑨	Vortex Flow Meter
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 (DA, DB type optional)
	L									Remote type (only DA type)
Converter Type	C									Fluid: liquid; 24V DC; 4-20mA / Pulse output; Digital display; Ex
	V									24V DC; 4-20mA / Pulse output ( V type is only for Gas/ Steam application) No compensation
	DB									24V DC; 4-20mA output/ Pulse; Temperature & Pressure Compensation; 3 wires for option
	DA									24V DC; 4-20mA output/ pulse; Temperature & Pressure Compensation; Digital display; ±1.0% accuracy; max 420°C ; Ex;3 wires for option
	Notice:									Dual power (24V DC+Battery) is optional for C, V, D series
Body Material				S4						SS304
				S6						SS316
Explosion Proof				BT						ExdIIBT6
				CT						Exiall CT1- CT6
				NA						No explosion proof
Connection Rating				WAF						Wafer connection
				DXX						D16: DIN PN16 Flange; D25: DIN PN25 Flange...
				AXX						A15: ANSI 150# Flange; A30: ANSI 300 # Flange...
				JXX						J10: JIS 10K Flange; J20: JIS 20K Flange...
				XXX						Insertion; Thread; Tri- clamp
Temperature				T1						-20...+100°C
				T2						-20...+250°C
				T3						-20...+300°C
				T4						-20°C...+420 °C (only for DA type)

## FLOW RANGE

Density (kg/m <sup>3</sup> )	Liquid Measurement										Qmax (Unit:m <sup>3</sup> /h)
	500	600	700	800	900	1000	1200	1400	1600	1800	
Diameter	Different density fluid, the mini flow rate Qmin(Unit:m <sup>3</sup> /h)										(Unit:m <sup>3</sup> /h)
DN15	0.66	0.55	0.52	0.41	0.4	0.39	0.33	0.31	0.29	0.26	4.5
DN20	1.27	1.1	1.08	0.99	0.88	0.66	0.64	0.62	0.59	0.57	8
DN25	1.43	1.32	1.21	1.16	1.1	0.99	0.9	0.84	0.78	0.75	12
DN32	2.09	1.98	1.87	1.78	1.72	1.65	1.6	1.49	1.32	1.1	20
DN40	3.85	3.52	3.3	3.08	2.86	2.51	2.42	2.31	2.2	2.09	32
DN50	5.17	4.73	4.29	4.07	3.96	3.85	3.3	3.08	2.86	2.75	50
DN65	7.81	7.15	6.93	6.82	6.71	6.6	5.5	4.95	4.62	4.4	84
DN80	12.1	11	10.56	10.12	10.01	9.9	8.8	8.36	7.7	6.6	127
DN100	22	19.8	18.7	17.6	16.5	15.4	14.3	13.2	11	9.9	198
DN125	30.8	28.6	27.5	26.4	25.3	24.2	23.1	22	19.8	15.4	310
DN150	57.2	55	49.5	46.2	39.6	35.2	33	30.8	28.6	22	445
DN200	108.9	96.8	85.8	77	68.2	62.7	58.3	55	47.3	38.5	791
DN250	202.4	181.5	165	143	121	97.9	88	79.2	74.8	60.5	1237
DN300	275	242	220	198	176	140.8	132	121	107.8	84.7	1780

## FLOW RANGE

Gas/ Air Measurement													
Density (kg/m <sup>3</sup> )	0.5	0.8	1.2	2.4	3.6	4.8	6	7.2	8.4	9.6	12	20	Qmax
Diameter	Different density fluid, the mini flow rate Qmin (Unit:m <sup>3</sup> /h)												Unit: (m <sup>3</sup> /h)
DN15	5.28	3.85	3.52	3.08	2.97	2.86	2.75	2.64	2.53	2.42	2.31	2.2	38
DN20	9.02	7.26	5.5	5.28	5.17	4.95	4.73	4.4	4.29	4.18	4.07	3.3	67
DN25	11	9.9	8.69	8.36	7.92	7.59	7.26	6.82	6.49	5.94	5.5	4.95	100
DN32	28.6	19.8	15.4	14.52	14.08	13.42	13.2	12.87	12.32	11.99	11.11	9.9	170
DN40	41.8	27.5	22	20.9	19.8	18.7	17.6	16.5	15.4	14.3	13.2	11	300
DN50	52.8	44	34.1	31.9	30.8	28.6	25.3	24.2	23.1	22	19.8	13.2	500
DN65	88	72.6	58.3	49.5	48.4	46.2	44	41.8	38.5	33	28.6	19.8	780
DN80	143	110	88	83.6	77	72.6	68.2	63.8	55	50.6	41.8	30.8	1200
DN100	198	176	132	121	110	99	88	77	68.2	61.6	52.8	38.5	2000
DN125	308	275	209	187	171.6	159.5	148.5	132	110	99	83.6	60.5	2900
DN150	418	341	308	286	264	242	220	198	176	154	121	93.5	4100
DN200	880	660	550	528	473	440	418	396	363	330	297	220	7500
DN250	1100	968	869	803	748	682	649	572	528	462	440	330	12500
DN300	1430	1309	1254	1166	1078	990	902	836	770	682	638	440	16500

## FLOW RANGE

Saturated Steam Measurement													
Mpa	0.1	0.2	0.3	0.4	0.5	0.6	0.8	0.9	1	1.2	1.6	2	Unit
°C	120	134	144	152	159	165	175	180	184	192	204	215	
Kg/m <sup>3</sup>	1.12	1.67	2.19	2.68	3.18	3.67	4.62	5.16	5.63	6.67	8.52	10.57	
Diameter (mm)	Different steam density corresponding with flow range												kg/h
15	Qmin	3.85	5.67	7.41	9.12	11	12.54	15.95	17.93	19.36	22.55	29.37	
	Qmax	35	51.5	67.4	83	100	115	146	163	176	205	268	329
20	Qmin	6.84	10.07	13.09	16.17	19.58	22.44	28.49	32.01	34.43	40.04	52.25	64.35
	Qmax	62.2	91.6	120	147	178	204	259	291	313	365	476	586
25	Qmin	10.68	15.73	20.46	25.3	30.69	34.98	44.55	49.94	53.79	62.59	81.73	100.54
	Qmax	97.1	143	187	230	279	318	405	454	489	569	743	914
32	Qmin	17.49	25.63	33.66	41.47	50.27	57.42	72.93	81.95	88.11	102.63	133.1	163.9
	Qmax	159	234	306	378	457	522	664	745	802	933	1218	1499
40	Qmin	25.3	36.3	47.3	58.3	70.4	80.3	102.3	110	121	143	187	231
	Qmax	300	440	575	710	860	980	1250	1400	1500	1750	2280	2810
50	Qmin	38.5	38.5	57.2	69.3	83.6	96.8	122.1	137.5	143	165	220	275
	Qmax	550	460	680	845	1020	1170	1480	1670	1800	2100	2730	3360
65	Qmin	64.9	95.7	125.4	150.7	182.6	209	264	303.6	326.7	379.5	495	605
	Qmax	790	1160	1520	1835	2222	2540	3230	3620	3970	4620	6030	7422
80	Qmin	98.45	144.1	189.2	233.2	282.7	319	407	451	495	572	748	924
	Qmax	1195	1760	2300	2800	3400	3900	4900	5580	6000	6999	9100	11000
100	Qmin	0.15	0.22	0.3	0.36	0.44	0.51	0.64	0.72	0.77	0.9	1.1	1.43
	Qmax	1.87	2.75	3.6	4.43	5.36	6.12	7.78	8.73	9.4	11	14.3	17.6
125	Qmin	0.24	0.35	0.46	0.56	0.68	0.78	1	1.1	1.21	1.41	1.84	2.2
	Qmax	2.91	4.29	5.62	6.91	8.37	9.56	12	13.6	14.7	17	22.3	27.4
150	Qmin	0.35	0.51	0.66	0.81	0.99	1.13	1.44	1.62	1.74	2.02	2.64	3.26
	Qmax	4.2	6.18	8.09	9.96	12	13.8	17.5	19.6	21.1	24.6	32.1	39.5
200	Qmin	0.62	0.9	1.19	1.45	1.76	2.01	2.56	2.87	3.09	3.61	4.71	5.8
	Qmax	7.5	11	14.4	17.7	21.4	24.5	31.1	35	37.6	43.7	57.1	70.3
250	Qmin	0.96	1.41	1.85	2.2	2.76	3.16	4	4.5	4.84	5.61	7.36	3.02
	Qmax	11.6	17	22	27.6	33	38	48	54	58.7	68	89	110
300	Qmin	1.38	2.04	2.66	3.28	3.97	4.54	5.78	6.48	6.97	8.12	10.56	12.98
	Qmax	16.7	24.7	32	39	48	55	70	78	84	98	128	158