

Product Data Sheet
PDS-VX
2021-01-09

Ex-DELTA Vortex Flowmeter



Description

Rugged, yet simple, the Ex-DELTA vortex flowmeter is suitable for a variety of applications in liquid, gas, air and steam flows. Sparling/Oval vortex flowmeters are volumetric flow measuring devices constructed with stainless steel bodies which provide accurate and reliable measurement for years in industrial service.

The various body styles provide complete flexibility of installation including wafer, flanged and replaceable sensor style which allows servicing of the sensor without shutting down the process flow.

Principle of Operation

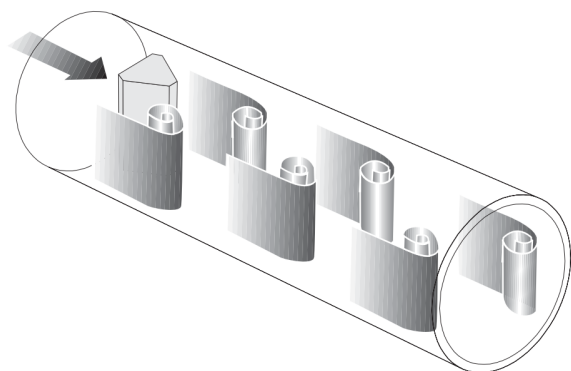
Sparling Vortex Meters measure flow rate based on Karman's vortex shedding principle. The stationary trapezoidal object (bluff body) placed into the path of the flow stream sheds vortices downstream at a frequency proportional to the velocity of flowing media. A piezoelectric sensor detects the vortices and creates electrical impulse signals which is proportional to the fluid flow rate.

Applications

The measures liquid gas, or steam flows in one flowmeter throughout your plant. Having a wide flow and temperature range, it can be extensively used in numerous applications.

Common Applications Include:

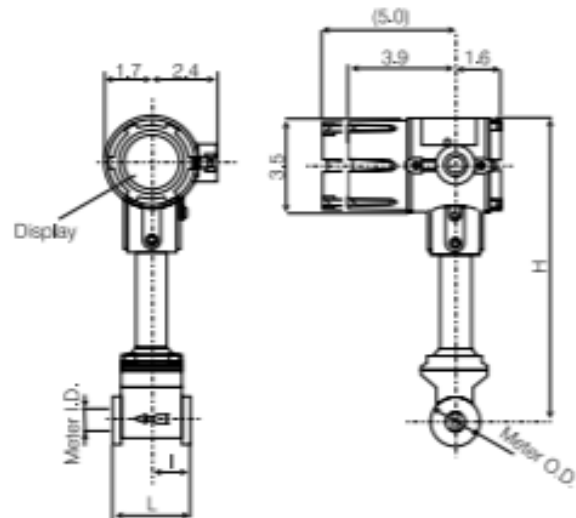
- measurement of steam, saturated steam in power plants, chemical plants, refineries and steel plants
- Gas flow (nitrogen, oxygen, argon, etc) measurements and monitoring
- demineralized and pure water in biotech, semiconductor and pharmaceutical
- air flow measurement
- oil and crude methanol up to 100cp
- HVAC
- food processing



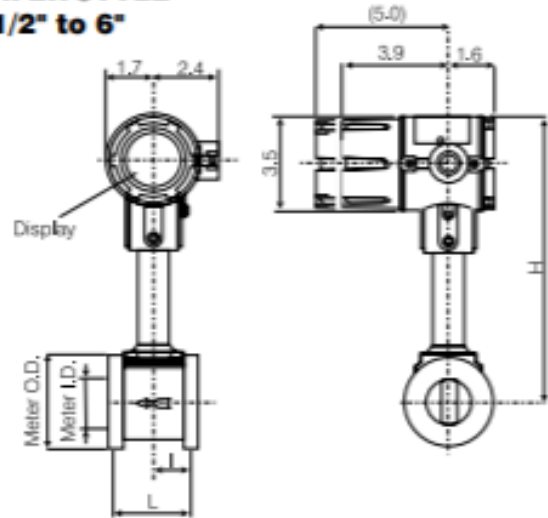
Features

- Standard $\pm 1\%$ Accuracy
- Sizes available from 0.5" - 12"
- The unique casting design provides simple construction without any moving parts, ease of use and service in the field and long life. The net result is essential savings in initial cost, running expense and total cost.
- SST trapezoidal body and embedded piezoelectric sensor avoids contact with process fluid.
- Fixed and replaceable sensors. The replaceable sensor design allows servicing of the sensor without interrupting the flow and without taking the meter out from the pipeline. This is suitable for long term processes and avoids stocking of the replacement spool pieces.
- High temp sensors to 788°F (420°C) Standard temperature range of -22°F - 572°F The wide range of temperature and pressure allows flow measurement of a variety of fluids.
- NEMA 4X Enclosure
- User selectable rate and total display - Integral mount transmitter with instantaneous flow rate indicator and totalizer
- The EX DELTA is also available as battery powered (without 4-20mA). This will eliminate the need of an external power source and saves wiring and installation costs. The meter will display low battery indication when a new battery is required.
- Explosion Proof (Optional)
- Optional remote mount transmitter allows monitoring of the flow from a remote or central location.
- Battery powered unit is also available on a remote mount transmitter.
- EL2300 laptop interface allows the user to change flow meter range from a remote location.
- 4-20mA or Scaled Pulse Outputs

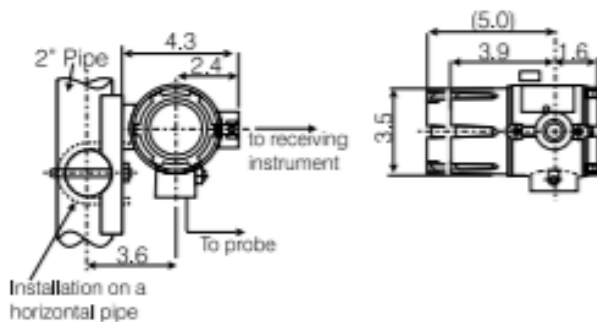
WAFER STYLE 1/2" to 1"



WAFER STYLE 1 1/2" to 6"



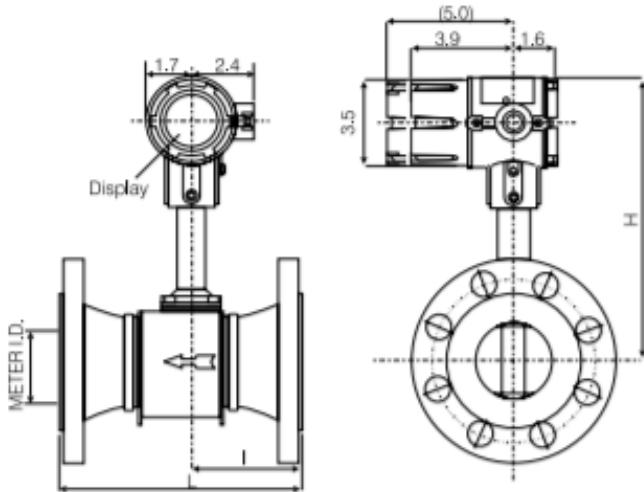
REMOTE TRANSMITTER



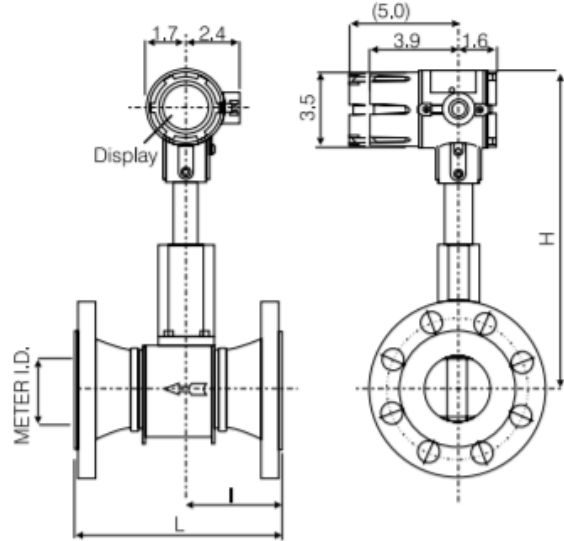
Approx Weight = 4.6 lbs.

Size (in)	L	I	Meter I.D.	Meter O.D.	H	Weight (lbs)
0.500	2.60	1.30	0.600	1.60	10.9	7.00
1.00	2.60	1.30	1.00	2.60	10.9	8.00
1.50	3.10	1.60	1.50	3.20	10.3	10.0
2.00	3.10	1.60	1.90	3.60	10.5	10.0
3.00	3.90	1.60	2.90	5.00	11.1	16.0
4.00	4.99	1.60	3.70	6.10	11.9	24.0
6.00	6.50	1.90	5.50	8.50	3.10	46.0

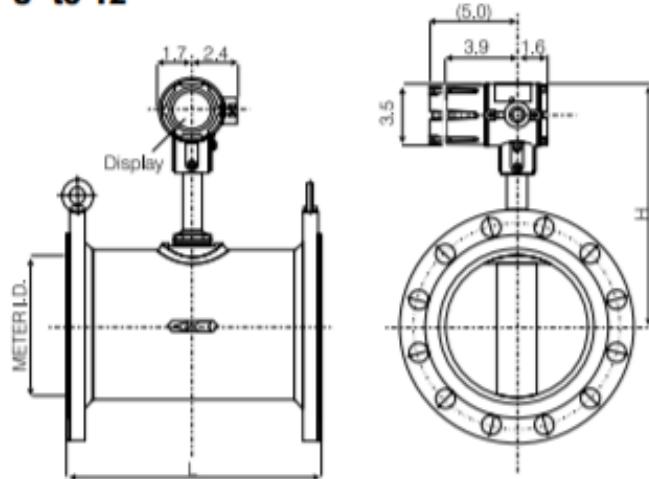
FLANGED STYLE (Fixed Sensor)
2" to 6"



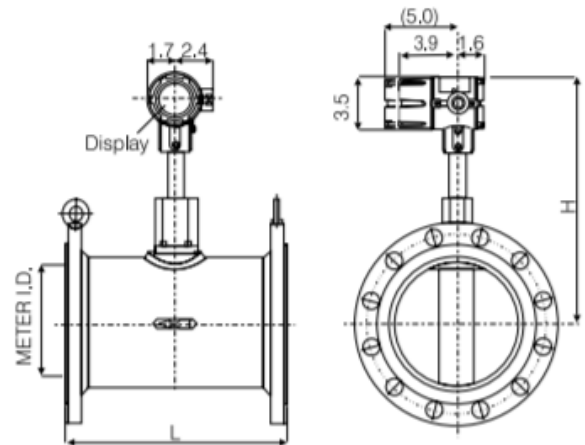
FLANGED STYLE (Replaceable Sensor)
2" to 6"



FLANGED STYLE (Fixed Sensor)
8" to 12"



FLANGED STYLE (Replaceable Sensor)
8" to 12"



Size (in)	Flange Rating	L	I	Meter I.D.	H	Weight (lbs)
2.00	ANSI 150	8.00	4.00	1.90	10.5	24.0
2.00	ANSI 300	8.50	4.30	1.90	10.5	28.0
3.00	ANSI 150	9.30	4.00	2.90	11.1	42.0
3.00	ANSI 300	10.0	4.60	2.90	11.1	52.0
4.00	ANSI 150	10.8	4.80	3.70	11.9	58.0
4.00	ANSI 300	11.6	5.20	3.70	11.9	79.0
6.00	ANSI 150	13.4	5.60	5.50	13.1	105
6.00	ANSI 300	14.1	5.99	5.50	13.1	148
8.00	*	13.8	*	7.90	13.7	88.0
10.0	*	17.7	*	9.80	14.5	154
12.0	*	19.7	*	11.7	15.4	198

Size (in)	Flange Rating	L	I	Meter I.D.	H	Weight (lbs)
2.00	ANSI 150	8.00	4.00	1.90	13.7	23.0
2.00	ANSI 300	8.50	4.30	1.90	13.7	27.0
3.00	ANSI 150	9.30	4.00	2.90	14.3	41.0
3.00	ANSI 300	10.0	4.60	2.90	14.3	51.0
4.00	ANSI 150	10.8	4.80	3.70	15.0	60.0
4.00	ANSI 300	11.6	5.20	3.70	15.0	81.0
6.00	ANSI 150	13.4	5.60	5.50	16.3	104
6.00	ANSI 300	14.1	5.99	5.50	16.3	146
8.00	*	13.8	*	7.90	16.9	87.0
10.0	*	17.7	*	9.80	17.7	153
12.0	*	19.7	*	11.7	18.6	197

Liquid

Size (in)	Liquid (GPM)	
	Min. Flow	Max. Flow
0.5	3.52	26.42
1	7.05	88.1
1.5	10.6	211.3
2	13.21	347.8
3	20.25	757.3
4	48.43	1301.3
6	145.3	2840
8	211.3	4975
10	466.7	7705
12	664.8	11052

Above table is based on typical liquid (water) measurement, sp. gravity 1 at 70°F

Steam

***= Accuracy ±1% Full Scale**

()= Accuracy ±1.5% Reading

Accuracy=±1% Full Scale Reading

Pressure (psi)		0.5"		1"		1.5"		2"		3"		4"		6"		8"		10"		12"	
7	Min	12.1*	22	30.8	48.4*	63.8	88	176	308	660	1144	2508	3608								
	Max	63.8	246.4	550	924	2090	(2618)	3520	(4488)	7942	(9812)	13310	(17204)	19998	(26620)	28380	(38060)				
14	Min	13.2*	22	44	55*	63.8	110	198	352	748	1298	2882	4114								
	Max	81.4	321.2	717.2	1210	2706	(3410)	4576	(5852)	10340	(12760)	17336	(22220)	25960	(34540)	36960	(49720)				
28.4	Min	13.2*	22	46.2	72.2	132	264	462	968	1694	3762	5390									
	Max	81.4	466.4	1045	1760	3960	(4950)	6666	(8514)	15048	(18560)	25080	(32560)	37620	(50380)	53900	(72160)				
57	Min	24.2	59.4	99	176	374	616	1342	2332	5148	7392										
	Max	191.4	752.4	1681	2838	6358	(7986)	10714	(13706)	24200	(29700)	40480	(52360)	60720	(80960)	86900	(116160)				
71	Min	28.6	66	112.2	198	418	704	1496	2618	5786	8272										
	Max	226.6	893	1993	3366	7546	(9482)	12716	(16280)	28600	(35420)	47960	(62040)	72160	(96140)	103180	(137940)				
100	Min	33	81.4	134	220	484	836	1782	3124	6908	9900										
	Max	297	1170.4	2596	4400	9900	(12430)	16676	(21340)	37620	(46420)	62920	(81400)	94600	(126060)	135080	(180840)				
128	Min	37.4	92.4	154	264	550	550	946	3608	7964	11396										
	Max	367.4	1447.6	3212	5456	12254	(15356)	12254	(15356)	20592	(26180)	77880	(99000)	116820	(155980)	166980	(222200)				
157	Min	41.8	103.4	171.6	286	616	1078	2310	4048	8954	12826										
	Max	437.8	1724.8	3828	6490	14586	(18260)	24420	(31240)	55440	(68420)	992840	(119900)	139260	(185680)	198880	(266200)				
171	Min	44	110	180.4	308	660	1122	2442	4246	9416	13483										
	Max	473	1861.2	4136	6996	15730	(19756)	26400	(33880)	59840	(73700)	100100	(129360)	150260	(200420)	214720	(286000)				
199	Min	48.5	118.8	198	330	726	1232	2662	4840	10120	14762										
	Max	541.2	2131.8	4752	8030	18040	(22440)	30140	(38720)	68420	(84480)	114620	(148060)	172260	(228800)	244200	(327800)				
228	Min	52.8	129.8	215.6	352	770	1320	2882	5060	11176	15994										
	Max	611.6	2398	5368	9064	20372	(25520)	34100	(43780)	77220	(95480)	129580	(167200)	183260	(257400)	277200	(369600)				
257	Min	57.2	138.6	231	396	836	1430	3102	5434	12012	17292										
	Max	68.2	2684	5984	10120	22660	(28380)	38060	(48840)	86240	(106480)	144540	(186560)	216700	(288200)	308000	(413600)				
284	Min	59.4	149.6	246.4	418	902	1518	3300	5786	12804	19052										
	Max	752.4	2948	6600	11154	24860	(31240)	42020	(53900)	95040	(117260)	159280	(205700)	237600	(316800)	341000	(455400)				
426.3	Min	77	191.4	319	528	1144	1980	4268	8470	16566	28160										
	Max	1104.4	4334	9702	16390	36740	(45980)	61820	(79200)	139700	(172480)	233200	(301400)	349800	(466400)	501600	(671000)				
568	Min	94.6	233.2	385	638	1386	2376	5170	11242	21692	37400										
	Max	1467.4	5764	128992	21780	48840	(61160)	82060	(105160)	185680	(228800)	310200	(400400)	466400	(620400)	666600	(891000)				
612	Min	99	244.2	404.8	660	1452	2486	5412	12100	23320	40040										
	Max	1577.4	6204	13860	23320	52580	(65780)	88440	(113080)	199760	(246400)	334400	(431200)	501600	(668800)	717200	(959200)				

Gas

Size (in)	Gas (ACFM)	
	Min. Flow	Max. Flow
0.5	6.74	19.43
1	12.34	76.51
1.5	18.56	170.67
2	24.51	288.37
3	46.21	647.35
4	80.76	1088.73
6	174	2456
8	300.83	4120
10	650.16	6180
12	928.8	8878

Above table is based on air measurement at 70°F & atmosphere pressure of 15 psi

How to Order a Smart Ex-DELTA

Table 1: Base Model Number

VXW - Wafer type body style (0.5-6") - Fixed sensor

VXF - Flange type body style (2-12") - Fixed sensor

VXR - Flanged replaceable sensor (2-12")

Table 2: Applications

1 - Standard

Table 3: Size

015 - 0.5"

025 - 1"

040 - 1.5"

050 - 2"

080 - 3"

100 - 4"

150 - 6"

200 - 8"

250 - 10"

300 - 12"

Table 4: Meter Body Material

N - Stainless Steel Casting (0.5-6")

C - 316 stainless steel or equivalent (8-10")

Z - Other

Table 5: Pressure Rating

5 - 150 psi

6 - 300 psi

9 - Other

Table 6: Sensor Construction

1 - 1.5-12"

2 - 0.5-1" (separate sensor type)

Table 7: Fluids

G - Gas (below 572°F)

L - Liquid (below 572°F)

S - Gas or Steam (to 788°F) - Replaceable sensor only

H - Liquid (to 788°F) - Replaceable sensor only

Table 8: Preamplifier Construction

1 - Integral Mount

2 - Remote Mount

Table 9: Explosion Proof Construction

0 - None

1 - Explosion Proof

Table 10: Display

0 - None

1 - Totalizer or Digital Indicator

Table 11: Output

5 - Pulse Output

6 - 4-20mA

0 - Battery Powered

Table 12: Options

HART

Fieldbus

Model	Apps	Size	Material	Pressure	Sensor	Fluids	Preamp.	Exp. Proof	Display	Output
VXW	1	015	N	5	2	G	1	0	0	5

Standard Specifications

Accuracy:	±1% Full Scale
Repeatability:	±2% of full scale
Outputs:	4-20mA (0-100 seconds) or scaled pulse, Unscaled Pulse-pulse levels: "0"-4mA, "1"-20mA
Display:	User selectable Single Line, 8 digit totalizer 7 digit flow rate Percent full scale 8 section bar graph
Power Requirements:	12-45VDC or Battery Powered
Enclosures:	NEMA 4X Explosion Proof (Optional)
End Connections:	Wafer or Flanged
Flow Ranges:	See Tables
Process Fluids:	Gas, Steam, Air, Super Heated Steam, Saturated Steam, Dirty Liquids (EX DELTA DIA)
Construction Material:	Meter Body: Series 300 SST or 316 SST Bluff Body: 316 SST Enclosure: NEMA 4X Aluminum alloy with baked melamine finish
Pressure Rating:	• Wafer style design pressure is rated up to 725 psi. • Check the connecting flange rating for flange style meters (150 psi, 300 psi)
Operating Temp.:	-22°F to 572°F
High Temp. Construction:	788°F
Approvals:	Cenelec, CSA, FM