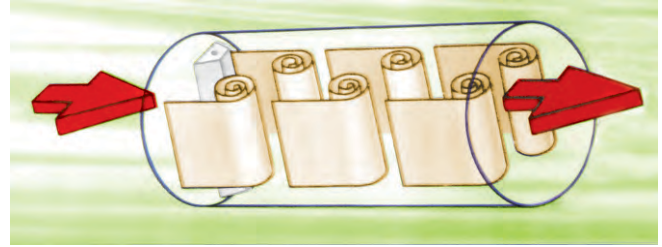


BFV Series Vortex Flowmeter

General

BFV Series vortex flowmeter is manufactured according to the principle of Karman vortex principle together with latest digital transmitter (DSP technology). It is widely used to measure liquid, gas, steam flow in the closed pipeline because the original detection is sealed in the test body, no contact with the measured medium and there is no lining material and moving parting, it does not need on-site maintenance and it is very popular with the majority of users in industries of oil, petrochemical, water/waste water treatment, metallurgy, pharmacy, thermoelectric, etc. for process control and measurement management.



Picture 1

Feature And Main Technical Datum

- Compact structure
- No moving parts, long service time
- Long time stability
- Same sensor can measure liquid, gas and steam
- Whith acceptable Reynold number, the meter coefficient is free from the influence of the change of temperature, pressure, viscosity and others.
- Reynolds No. Range: $2 \times 10^4 \sim 7 \times 10^6$ (For DN25~DN100)
 $4 \times 10^4 \sim 7 \times 10^6$ (For DN150~DN300)
- Display: instant and total Flow
- Working Pressure: 1.6~32MPa
- Medium Temp.: $0 \sim +150$ °C (Integral Type)
 $+100 \sim +350$ °C (High temp. Type)
- Ambient Temp.: $-25 \sim +60$ °C
- Power: 24VDC $\pm 10\%$ Or 220 VAC
- Relative Humidity: 5%~95%
- Atmospheric Pressure: 86~106KPa
- Measurable Fluid: liquid, gas and steam
- Accuracy: 1% (For Liquid), 1.5% (For Gas and Steam)
- Output Signal: 4-20mA Current (2 Wire System) Or
Standard Pulse Output (3 Wire System)
Digital Communication Modbus RTU
Analog signal
- Anti-explosion Grade: Exd II BT4
- Anti-explosion Certificate No.: GYB 081788
- LCD digital display (read in L/min, m³/h, kg/h, etc.)



Picture 2

Principle

Put a drum vertically into a burette and let some fluid flow down along the drum, by two sides of which there formed, in rotation, regular vortexes, which is called the Karman Vortex Street. An output frequency of the Karman Vortex Street is related to fluid velocity and drum diameter, which can be described by following formula:

$$f = S_t \cdot \frac{v}{d}$$

Where,
f-Output frequency of the Karman Street
St-Coefficient (called as Strohar number)
v-velocity
d-Diameter

As an output frequency of the Karman Vortex Street f is direct proportional to a velocity v . It may work out an instantaneous flow rate by using a tested output frequency of the Karman Street. The Strohar number is a key coefficient for vortex street flow meters. Within the lineal section of the curve, where $St \approx 0.17$, the output frequency is direct proportional to the flow velocity, so a velocity v is derivable by using a tested frequency f .

LXW serials vortex street flow transducers detect the output frequency by using piezoeletricial elements inside the sensors (probes) to test the stress that is alternatively acted on the elements by vortex.

Flow Range (General Fluid)

Table 1

DN (mm)	Normal Flow Range(Working condition)	
	Water (m ³ /h)	Gas (m ³ /h)
25	1.5~15	10~100
40	3.6~36	15~300
50	6.0~60	35~500
80	11~110	60~1050
100	17~170	100~1850
150	27~360	220~3600
200	60~780	400~7000
250	90~1200	700~11000
300	160~1720	1000~16000

Note: The outfactory calibrated fluid is water or air.

Flow Range Of Saturated Steam

Table 2

DN (mm)	Flow Range	Measurable Flow Range (kg/h)								
		0.1MPa	0.2MPa	0.4MPa	0.6MPa	0.8MPa	1.0MPa	1.5MPa	2.0MPa	2.5MPa
25	Min.	11.55	16.70	26.80	36.70	46.20	56.30	81.00	105.7	130.0
	Max.	115.5	167.0	268.0	367.0	462.0	563.0	810.0	1057.0	1300.0
40	Min.	17.33	25.05	40.20	55.05	69.30	84.45	121.5	158.55	195.0
	Max.	346.5	501.0	804.0	1101.0	1386.0	1689.0	2430.0	3171.0	3900.0
50	Min.	40.43	58.45	93.80	128.45	161.7	179.05	283.5	369.95	455.0
	Max.	577.5	835.0	1340.0	1835.0	2310.0	2815.0	4050.0	5285.0	6500.0
80	Min.	69.30	100.2	160.8	220.2	277.2	337.8	486.0	634.2	780.0
	Max.	1212.8	1753.5	2814.0	3853.5	4851.0	5911.5	8505.0	11098.5	13650
100	Min.	115.5	167.0	268.0	367.0	462.0	563.0	810.0	1057.0	1300.0
	Max.	2136.8	3089.5	4958.0	6789.5	8547.0	1041.5	14985	19554.5	24050
150	Min.	196.35	283.9	455.6	623.9	785.4	957.1	1377.0	1796.9	2210.0
	Max.	4158.0	6012.0	9648.0	13212	16632	20268	29160	38052	46800
200	Min.	462.00	668.0	1072.0	1468.0	1848.0	2252.0	3240.0	4228.0	5200.0
	Max.	8085.0	11690	18760	25690	32340	39410	56700	73990	91000
250	Min.	808.50	1169.0	1876.0	2569.0	3234.0	3941.0	5670.0	7399.0	9100.0
	Max.	12705	18370	29480	40370	50820	61930	89100	116270	143000
300	Min.	1155.0	1670.0	2680.0	3670.0	4620.0	5630.0	8100.1	10570	13000
	Max.	18480	26720	42880	58720	73920	90080	129600	169120	208000

Outline Dimension

Flange Connection Type (See Picture 4 & Table 4)

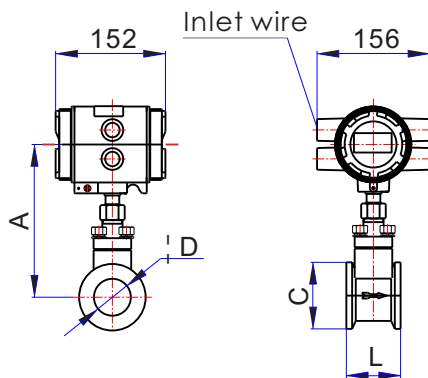
Wafer Connection Type (See Picture 3 and Table 3)

Table 4

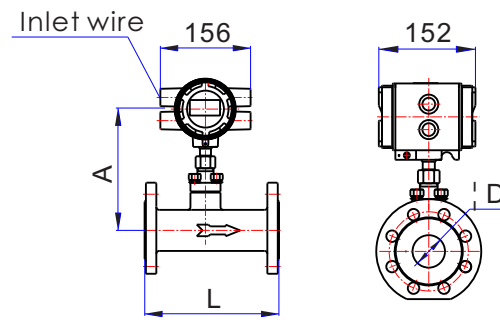
DN (mm)	A	ØD	L	Weight (kg)
25	195	25	180	5
40	203	40	200	8
50	208	50	232	11
80	225	70	330	19
100	233	94	410	25
150	270	139	270	33
200	269	186	310	45
250	292	231	370	70
300	315	276	400	100

Table 3

DN (mm)	A	Øc	ØD	L	Weight (kg)
25	196	64	25	70	3.2
40	203	73	40	70	4
50	208	92	51	75	5.5
80	224.5	127	71	100	9
100	233	157	94	120	12



Picture 3



Picture 4

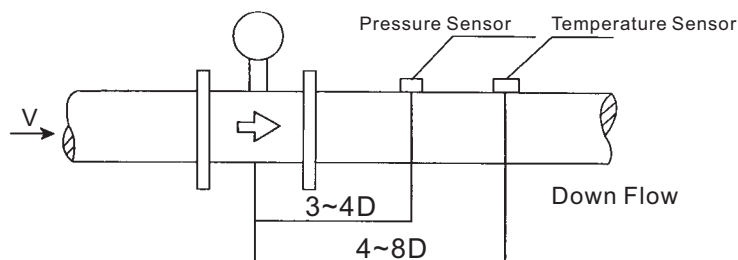
Straight Pipe length Requirement

Table 5

Connection Pipe Form	Least requirement of straight pipe	
	Upper Flow	Down Flow
Concentric shrink pipe	15D	5D
Concentric flare pipe	35D	5D
One 90° turning	20D	5D
Two 90° turning in same plane	25D	5D
Two 90° turning in different plane	30D	5D
Full open valve	20D	5D
Half-open valve	40D	5D

Note: D-Means the nominal diameter of flowmeter

If need install temperature sensor and/or pressure sensor in the pipe system, the sensor should be installed the down flow of the flowmeter as the below picture shown.



Picture 5



Model selection

Meter	1	γ	3	4	5	6	7	8	9	10	Instructions
	DN	Transmitter	PN	Connection	Electricity Shield	Signal Output	Power Supply	Display	Compensation	Reducing flange	
BFV	-										Vortex flowmeter
	02										25mm
	04										40mm
	05										50mm
	08										80mm
	10										100mm
	15										150mm
	20										200mm
	25										250mm
	30										300mm
		ZY									integrated type for liquid
		ZQ									Integrated type for gas 150 °C
		ZH									Integrated type for gas 250 °C
		ZX									Integrated type for gas 300 °C
			1.6								1.6MPa
			2.5								2.5MPa
			4.0								4.0MPa
			6.3								6.3MPa
			16								16MPa
			25								25MPa
			32								32MPa
				J							Wafer type
				F							Flange type
					A						General type
					B						Anti explosion type
						F					Pulse output
						I					4-20mA output
							W				24VDC
							N				3.6VDC
								O			Without local display
								X			With local display
									O		Without compensation
									T		With compensation
										O	None
										S1	Reducing flange(I)
										S2	Reducing flange(II)

Example: BFV-05ZY1.6JBFWX

Flowmeter in diameter of DN50, to measure liquid, 1.6MPa, wafer type, anti explosion type, pulse output, power supply: 24V, with local display.

Ordering Information

- Nominal Diameter £ DN _____ mm
- Fluid Name: _____
- Flow £ Max.: _____ m³/h Normal _____ m³/h Min. _____ m³/h
- Fluid Temp.: _____ i
- Working Pressure: _____ MPa
- Fluid Density: _____ g/cm³
- Output Signal: _____