Description

The **FBFP-FBVP Inline Compact Flow Meter** utilizing **"Karman Vortex"** theory which can meet the requirement of measuring the flow rate various fluids such as gas, steam, liquids.

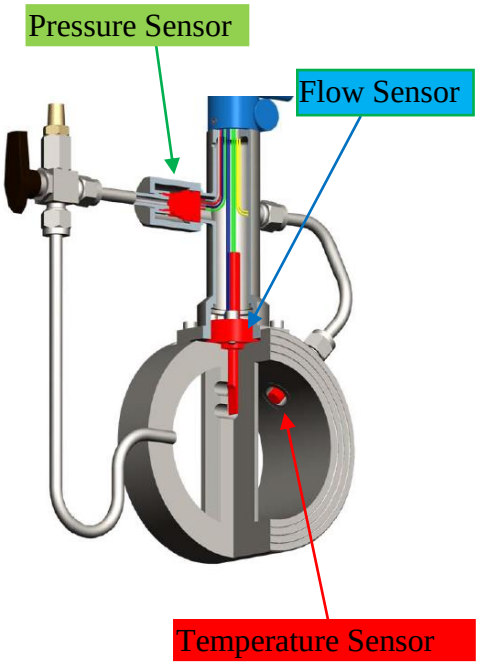
The **FBFP-FBVP** uses the DS-DSP trransmitter technology, which provides with the excellent signal proccessing capability and enhance the vortex metering technology to a new level, which means it has lower measuring limit, better stability and accuracy.

The unique dual-sensor design and special signal processing method has also ensured a better anti-vibration by eliminating the vibration signals to provide more reliable performance and lower measurement limit.

The **FBFP-FBVP** platform is also an open platform, which means we can keep on upgrading it is function according to customer's unique requirement, and make the product a highly custom-orientation product.

Features

- Volumetric or mass flow monitoring of most liquids, gases, and steam
- Multivariable meter delivers mass flow, temperature, pressure, and density readings from a single installed device and reduces initial cost, installation cost and cost-of ownership over the lifetime of the instrument
- Mass flow equations - real gas, ideal gas, AGA 8, API 2540
- Compensated mass flow reading of liquids, gases, and steam
- Energy Monitoring–ability to compute and output energy use
- Easy to install and commission
- Reliable–no moving parts, no fluid to sensor contact
- High accuracy with rangeability up to 40:1
- Temperature up to 350°C
- Pressure up to 100 barg
- Inline configuraton for pipes from DN25 to DN 300
- Field configurable ranges, outputs and displays
- Remote electronics option available for use in harsh environments or locations with limited access
- 4-20mA loop–powered Mass Meter design saves on energy costs
- HART protocol communications - Standard
- Modbus communications available



Display

Application Guide

Model	Liquid	Gas	Steam	Temperature Range	Max.Pressure	Line Size	
				°C	Bar	Inch	DN
FBFP-FBVP	Yes	Yes	Yes	-40 to 150 -40 to 250 -40 to 350	100	1" to 12"	25 to 300

Performance Specification

Accuracy (linear ranges)

Liquid…… < +/- 0.5% of flow rate
Test conditions: Water at 18.3 °C , 3.4 bar
with 10 pipe diameters upstream and 5 pipe diameters downstream

Gas…….. < +/- 1.0 % of flow rate (Volumetric)
< +/- 1.5% of flow rate (VTP compensation)
Test conditions: Air 18.3 °C, 1.7 barg
with 10 pipe diameters upstream and 5 pipe diameters downstream

Steam……. < +/- 1.0 % of flow rate (Volumetric)
< +/- 1.5 % of flow rate (VTP compensation)
Test conditions: Saturated Steam at 8.6 barg
with 10 pipe diameters upstream and 5 pipe diameters downstream

Flow Rate
Adjustable from:
1 second
1 minute
1 hour
1 day

Analog Output
Calibrated to **0.001mA** of reading

Repeatability……+.2 % of flow rate

Straight Run Piping Requirements

Straight Run Piping Requirements	Upstream	Downstream
One 90° elbow before the meter	10 D	5 D
Two 90° elbows before the meter	15 D	5 D
Two 90° elbows out of plane before the meter	30 D	5 D
Reduction before meter	10 D	5 D
Regulator or Valve partially closed before meter	30 D	5 D
Tee Connection Before meter	30 D	5 D

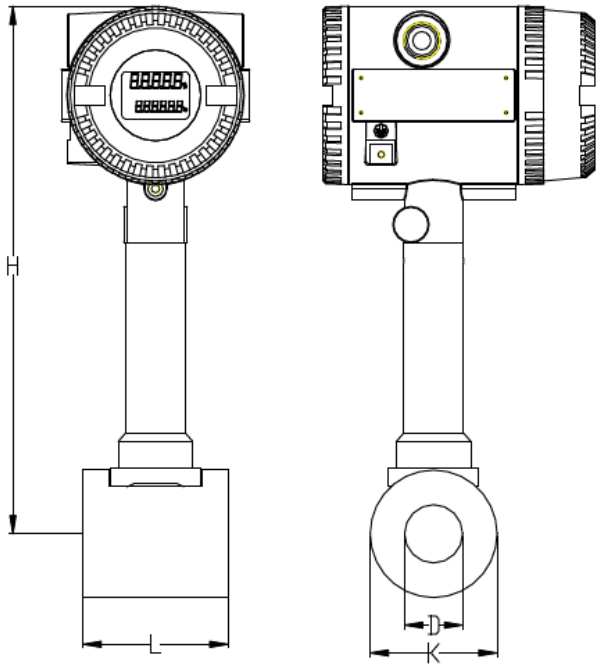
Specifications

All Wetted Parts	AISI304, AISI316 as optional. Please consult for other materials
Environmental Conditions	Ambient Temperature -40 to 60°C , Humidity %0 to %90
Output	4...20 mA and pulse
Communication	RS-485 Modbus-RTU, HART
Power Supply	24V DC, ±10%
Transmission Distance	100 m >
Hazardous Area	Ex d II B T6 optional
Protection	IP65
Display	LCD,rate and total indicator, (density, temperature, pressure for VTP calc.)
Units	All engineering Units
Min. Velocity Ranges	Liquids : **0,3 m/sec**
	Gas and Steam : **4 m/sec** for DN25 and DN32 **2m/sec** for DN40 and DN300
Max. Velocity Ranges	Liquids : **7 m/sec**
	Gas : **60 m/sec**
	Steam : **70 m/sec**

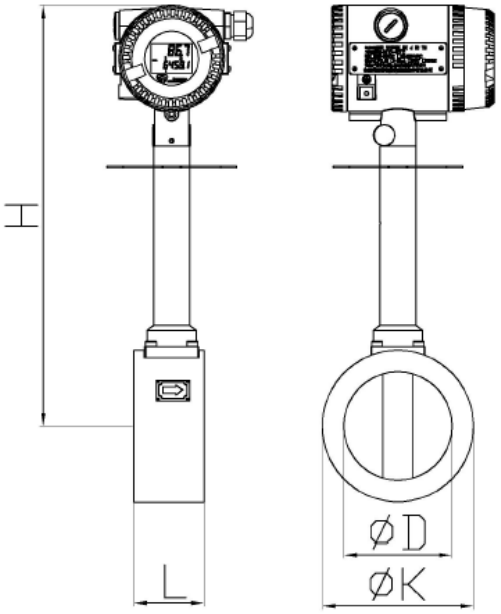
Ordering

FBFP-FBVP							Description
Media	V						Volumetric Calculation
	VT						Temperature Compensation for Saturated Steam
	VPT						Temp.and Pressure Calculation for Steam and Gas
Size		025					DN25
		040					DN40
		050					DN50
		065					DN65
		080					DN80
		100					DN100
		125					DN125
		150					DN150
		200					DN200
		250					DN250
		300					DN300
Connection Rating			P6				PN16
			P4				PN40 (Contact us)
			XX				Others, please fill directly
Converter				C			Compact
				R			Remote, please specify cable length directly
Temperature Range					L		Tmax : 150°C
					M		Tmax : 250°C
					H		Tmax : 350°C
Pressure Range						P1	0-1 barg
						P2	0-10 barg
						P3	0-40 barg
						N	None
Communication						R	RS485, MODBUS-RTU
						H	HART
Hazardous Area						N	None
						E	Ex d II B T6

Dimensions



Wafer(in 150°C)

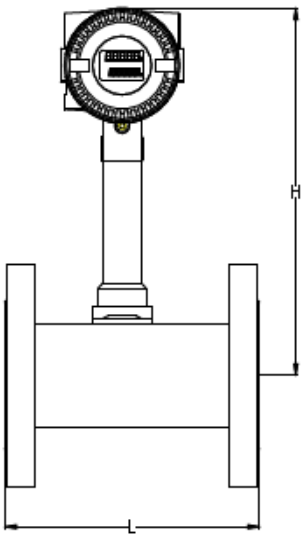


Wafer(in 250°C)

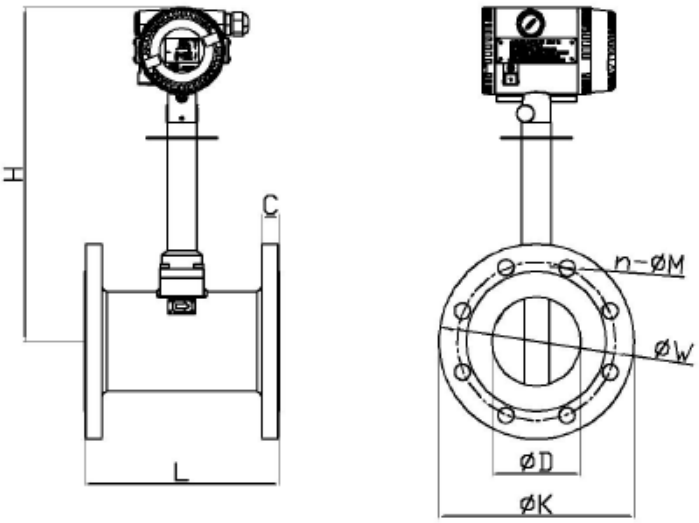
Dimension for Wafer Type

Size	ID	(Pipe O/D)K	Pipe length L	Flange screw hole distance W	Flange thickness C	Screw hole dia m	Screw QTY n	Flange O/D K	150℃ Height H	250℃ Height H
15	15	75	65	100	18	14	4	130	293.5	354.5
20	20	75	65	100	18	14	4	130	291	352
25	25	75	65	100	18	14	4	130	288.5	349.5
32	32	80	65	120	20	14	4	145	292.8	353.8
40	40	84	65	120	20	14	4	145	295.8	356.8
50	50	94	65	132	22	18	4	160	301	362
65	65	105	65	144	24	18	4	180	308.5	369.5
80	80	120	65	160	24	18	6	192	316	377
100	100	140	90	190	24	18	8	230	327	388
125	125	165	65	210	26	18	8	242	340.5	401.5
150	150	190	65	240	28	22	8	280	353	414
200	200	240	85	296	28	22	12	335	378	439
250	250	290	100	354	28	22	12	405	404	465
300	300	340	120	412	30	22	12	460	429	490

Dimensions



Flange(in 150°C)



Flange(in 250°C)

Dimension for DIN PN16 Flanged

Size	ID	Pipe O/D K	Pipe length L	Flange screw hole distance W	Flange thickness C	Screw hole dia m	Screw QTY n	150℃ Height H	250℃ Height H
15	15	95	180	65	14	14	4	301.5	362.5
20	20	105	180	75	16	14	4	299	360
25	25	115	180	85	16	14	4	295.5	356.5
32	32	140	180	100	18	18	4	300.5	361.5
40	40	150	180	110	18	18	4	302.5	363.5
50	50	165	180	125	20	18	4	307	368
65	65	185	200	145	20	18	8	314	375
80	80	200	200	160	20	18	8	326	387
100	100	220	200	180	22	18	8	336	397
125	125	250	220	210	22	18	8	345	406
150	150	285	220	240	24	22	8	360	421
200	200	340	220	295	26	22	12	385	446
250	250	405	250	355	29	26	12	412.7	473.5
300	300	460	300	410	32	26	12	445.4	506.4

****The dimensions should be used just for mechanical installation.**
****The manufacturer may make changes to the dimensions.**

Bass Ölçme Enstrümanları Limited Şirketi
Esenşehir Mah. Füsun Sok. No:59 Ümraniye-İSTANBUL 34776
Tel : +90 216 660 01 63 Faks : +90 216 660 01 65
www.bass.com.tr bass@bass.com.tr