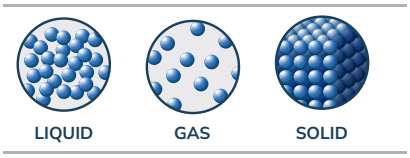
FBVP
Vortex Wafer Type Flowmeter





OVERVIEW

Operation

FBVP Vortex Wafer Type Flow meter measuring the flow rate various fluids such as gas, steam, liquids.

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.

Applicaiton

- Pharmaceutical industry
- Chemical processes
- Heat treatment
- Energy distribution in auxiliary and supply circuits
- Measurement of consumption of industrial gases (natural gas, nitrogen etc.)
- Measurement of consumption in compressed air systems

Features

- Volumetric or mass flow monitoring of most liquids, gases and steam
- Installation cost and cost-of ownership over the lifetime of the instrument
- Mass flow equations real gas, ideal gas, GA 8, APIN2540
- 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
- Field configurable ranges, outputs and display
- 4-20mA loop-powered mass meter design saves on energy costs
- HART / MODBUS communication are available

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OPERATING DATA

Operating Pressure
100 bar max.

Temperature Limit
-40°C... +350°C

Environmental Conditions
Ambient Temp. -40 to 60°C,
Humidity %0 to %90

Accuracy Liquid
±0.5% of flow rate

Accuracy Gas
±0.1% of flow rate(Volumetric)
±1.5% of flow rate(VTP)

Repeatability
0.3% RD

Hazardous Area
Ex d II B T1...T6 optional

Protection
IP65, IP67&IP68 on request

Display
LCD,rate and total indicator

Analog Output
Calibrated to ±0.001 mA of reading

Accuracy Steam
±1.0% of flow rate(Volumetric)
±1.5% of flow rate(VTP)

MATERIALS

Wetted Parts Material
AISI304
AISI316 & AISI316L on request

MEASURING RANGES

Min. Velocity Ranges

Liquids
0,3 m/sec

Gas and Steam
4 m/sec for DN25 and DN32
2 m/sec for DN40 and DN300

Max. Velocity Ranges

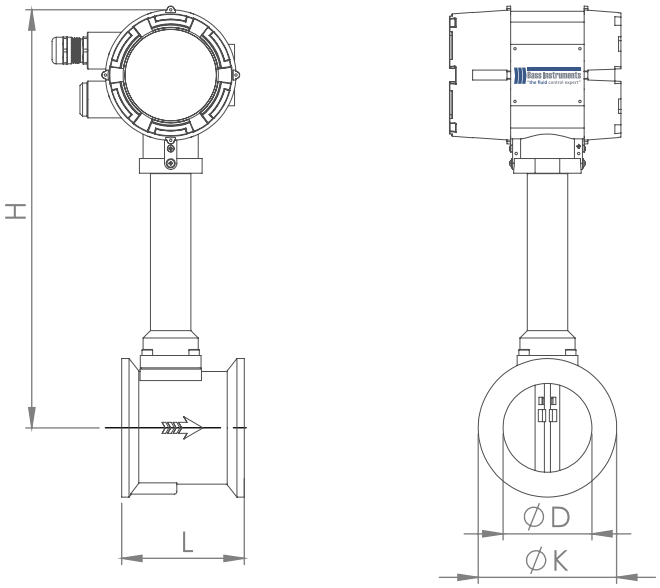
Liquids
7 m/sec

Gas
60 m/sec

Steam
80 m/sec

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TECHNICAL DRAWINGS AND DIMENSIONS



A. Dimension for Wafer type

Size	K	L	H
15	65	65	358
20	65	65	358
25	65	65	358
32	65	65	358
40	76	79	363
50	87	80	369
65	101	92	375
80	102	100	376
100	134	124	395
125	158	145	405
150	180	165	415
200	247	195	450
250	297	113	475
300	346	127	500

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MEASURING RANGE

Gas/Liquid Measuring Range

Pipe SİZe		Gas Actual Flow				Liquid Actual Flow			
		Min Flow m³/h	Max Flow m³/h	Min Flow cu.ft/min	Max Flow cu.ft/min	Min Flow m³/h	Max Flow m³/h	Min Flow GPM	Max Flow GPM
25 mm	1 inch	7.1	123.6	4.2	72.7	0.5	12.4	2.3	54.4
32 mm	1.25 inch	11.6	202.5	6.8	119.2	0.9	20.2	3.8	89.2
40 mm	1.5 inch	9	316.4	5.3	186.2	1.4	31.6	6.0	139.3
50 mm	2 inch	14.1	494.4	8.3	291	2.1	49.4	9.3	217.7
65 mm	2.5 inch	23.9	835.5	14	491.7	3.6	83.5	15.8	367.8
80 mm	3 inch	36.2	1265.5	21.3	744.9	5.4	126.6	23.9	557.2
100 mm	4 inch	56.5	1977.4	33.3	1163.9	8.5	197.7	37.3	870.6
125 mm	5 inch	88.3	3089.7	52	1818.5	13.2	309.0	58.3	1360.4
150 mm	6 inch	127.1	4449.2	74.8	2618.7	19.1	444.9	84.0	1958.9
200 mm	8 inch	226	7909.6	133	4655.4	33.9	791.0	149.3	3482.5
250 mm	10 inch	353.1	12358.8	207.8	7274.1	53	1235.9	233.2	5441.4
300 mm	12 inch	508.5	17796.6	299.3	10474.7	76.3	1779.7	335.8	7835.6

Saturated Steam Measuring Range

Pipe Size		T= 112°C		T= 121°C		T= 134°C		T= 144°C		T= 159°C	
		P= 0.5 barG		**P= 1 barG**		**P= 2 barG**		**P= 3 barG**		**P= 5 barG**	
		D= 0.8798 kg/m³		D= 1.155 kg/m³		D= 1.672 kg/m³		D= 2.185 kg/m³		D= 3.182 kg/m³	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
25 mm	1 inch	6.2	108.7	8.2	142.7	11.8	206.6	15.4	270.0	22.5	393.3
32 mm	1.25 inch	10.2	178.1	13.4	233.9	19.3	338.6	25.3	442.4	36.8	644.3
40 mm	1.5 inch	8.0	278.4	10.4	365.4	15.1	529.0	19.8	691.3	28.8	1006.7
50 mm	2 inch	12.4	434.9	16.3	571.0	23.6	826.6	30.9	1080.2	44.9	1573.0
65 mm	2.5 inch	21.0	735.0	27.6	964.9	39.9	1396.9	52.2	1825.5	76.0	2658.4
80 mm	3 inch	31.8	1113.4	41.8	1461.7	60.5	2116.0	79.0	2765.2	115.1	4026.9
100 mm	4 inch	49.7	1739.7	65.3	2283.9	94.5	3306.2	123.4	4320.6	179.8	6292.1
125 mm	5 inch	77.7	2718.3	102.0	3568.6	147.6	5166.0	192.9	6751.0	280.9	9831.4
150 mm	6 inch	111.8	3914.4	146.8	5138.8	212.5	7439.0	277.8	9721.4	404.5	14157.2
200 mm	8 inch	198.8	6958.9	261.0	9135.6	377.9	13224.9	493.8	17282.5	719.1	25168.4
250 mm	10 inch	310.7	10873.2	407.8	14274.4	590.4	20663.8	771.5	27003.9	1123.6	39325.6
300 mm	12 inch	447.4	15657.5	587.3	20551.1	850.2	29755.9	1111.0	38885.6	1618.0	56628.8

*Metric unit, flow rate in kg/hr

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Pipe Size		T= 165°C		T= 171°C		T= 176°C		T= 185°C	
		P= 6 barG		**P= 7 barG**		**P= 8 barG**		**P= 10 barG**	
		D= 3.671 kg/m³		D= 4.218 kg/m³		D= 4.723 kg/m³		D= 5.752 kg/m³	
		Min	Max	Min	Max	Min	Max	Min	Max
25 mm	1 inch	25.9	453.7	29.8	521.3	33.4	583.7	40.6	710.9
32 mm	1.25 inch	42.5	743.3	48.8	854.1	54.6	956.3	66.6	1164.7
40 mm	1.5 inch	33.2	1161.4	38.1	1334.5	42.7	1494.3	52.0	1819.8
50 mm	2 inch	51.9	1814.8	59.6	2085.2	66.7	2334.8	81.2	2843.5
65 mm	2.5 inch	87.6	3066.9	100.7	3523.9	112.7	3945.8	137.3	4805.5
80 mm	3 inch	132.7	4645.8	152.5	5338.0	170.8	5977.1	208.0	7279.4
100 mm	4 inch	207.4	7259.0	238.3	8340.7	266.8	9339.3	325.0	11374.0
125 mm	5 inch	324.1	11342.2	372.4	13032.3	416.9	14592.6	507.8	17771.9
150 mm	6 inch	466.7	16332.8	536.2	18766.5	600.4	21013.3	731.2	25591.5
200 mm	8 inch	829.6	29036.2	953.2	33362.7	1067.3	37357.1	1299.9	45496.0
250 mm	10 inch	1296.3	45369.0	1489.4	52129.2	1667.7	58370.4	2031.1	71087.6
300 mm	12 inch	1866.6	65331.4	2144.7	75066.1	2401.5	84053.4	2924.7	102366.1

Pipe Size		T= 192°C		T= 199°C		T= 210°C		T= 215°C	
		P= 12 barG		**P= 14 barG**		**P= 18 barG**		**P= 20 barG**	
		D= 6.671 kg/m³		D= 7.706 kg/m³		D= 9.593 kg/m³		D= 10.57 kg/m³	
		Min	Max	Min	Max	Min	Max	Min	Max
25 mm	1 inch	47.1	824.5	54.4	952.4	67.7	1185.6	74.6	1306.3
32 mm	1.25 inch	77.2	1350.8	89.2	1560.4	111.0	1942.4	122.3	2140.3
40 mm	1.5 inch	60.3	2110.6	69.7	2438.1	86.7	3035.1	95.5	3344.2
50 mm	2 inch	94.2	3297.8	108.8	3809.5	135.5	4742.3	149.3	5225.3
65 mm	2.5 inch	159.2	5573.3	183.9	6438.0	229.0	8014.5	252.3	8830.7
80 mm	3 inch	241.2	8442.4	278.6	9752.2	346.9	12140.3	382.2	13376.7
100 mm	4 inch	376.9	13192.2	435.4	15237.9	542.0	18969.2	597.2	20901.1
125 mm	5 inch	588.9	20611.3	680.3	23809.1	846.8	29639.4	933.1	32658.0
150 mm	6 inch	848.0	29680.3	979.6	34285.2	1219.4	42680.7	1343.6	47027.5
200 mm	8 inch	1507.6	52765.0	1741.5	60951.4	2167.9	75876.8	2388.7	83604.5
250 mm	10 inch	2355.6	82445.3	2721.0	95236.6	3387.4	118557.6	3732.3	130632.1
300 mm	12 inch	3392.0	118721.2	3918.3	137140.7	4877.8	170722.9	5374.6	188110.2

*Metric unit,flow rate in kg/hr

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CONNECTION

Standart
PN16

On Request
PN40 and others

ELECTRICAL DATA

Output
4...20 mA and pulse

Transmission Distance
100 m >

Electrical Connection
1/2 NPT, M20 × 1.5

Power Supply
24V DC, ±10%

Converter
Compact
Remote, please specify cable length directly

COMMUNICATION

Protocol
Modbus-RTU
HART

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OPTIONS, ELECTRONIC

BAB216

Analog transmitter with display and counter



Flow computer versions

BAB216.DB

Selectable Inputs
4-20 mA

Selectable Inputs 2
4-20 mA or PT-100

Operating Media
Saturated Steam

BAB216.KB

Selectable Inputs
2 x 4-20 mA

Selectable Inputs 2
4-20 mA or PT-100

Operating Media
Superheated Steam

BAB216.GH

Selectable Inputs
2 x 4-20 mA

Selectable Inputs 2
4-20 mA or PT-100

Analog Input Resolution
10 bit

Digital Output Speed
50 Hz max

Humidity
%10...85 non-condensate

Power Consumption
3 W

Enclosure
IP65 (front) ,IP66, IP67 on request

Operating Media
Gases

Selectable Outputs
4-20 mA , 0-10VDC and Pulse

Digital Input Speed
10 KHz, max

Display
TFT, 4.3" 480x272 pixel resistive touchscreen

Power Supply
24 VDC, ±%10

Dimensions
144 x 144 mm (front) , 134 x 134 mm (rear), depth 100 mm

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BAB212



Selectable Inputs

4-20 mA,0-10VDC,0-5VDC,Pulse (PNP,NPN)

Operating Media

Air, Liquids

Selectable Outputs

4-20 mA , 0-10VDC and Pulse

Analog Input Resolution

10 bit

Digital Input Speed

10 KHz, max

Digital Output Speed

50 Hz, max

Display

TFT, 4.3" 480x272 pixel resistive touchscreen

Humidity

%10...85 non-condensate

Power Consumption

3 W

Enclosure

IP65 (front) , IP66 , IP67 on request

Power Supply

24 VDC, ±%10

Dimensions

144 x 144 mm (front) ,134 x 134 mm (rear), depth 100 mm

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ORDERING

Model	
FBVP	Vortex Flowmeter

Type	
W	Wafer
R	Reduction

Media	
V	Volumetric Calculation
VT	Temperature Compensation
VTP	Temperature and Pressure Compensation

Size	
025	DN25
040	DN40
050	DN50
065	DN65
080	DN80
100	DN100
125	DN125
150	DN150
200	DN200
250	DN250
300	DN300
XXX	DN300-DN700 for insertion type (Specify in order)

Connection Rating	
P6	PN16
P4	PN40
XX	Others

Converter	
C	Compact
R	Remote, please specify cable length

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	N
Xd	II 2G Ex db IIC T1...T6 Gb

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