



OVERVIEW

Operation

BMVA Series vortex flow sensors are velocity-based flow measurement devices designed for industrial piping applications. A piezoelectric sensor detects vortices generated by the bluff body, producing a frequency signal proportional to the flow rate. Within the specified Reynolds number range, the vortex frequency is largely independent of fluid properties such as temperature, pressure and density. The meter factor is determined by the geometry of the vortex generator, providing stable volumetric flow measurement with low pressure loss and a wide measuring range.

Features

- Robust design with no moving parts
- Easy installation and low maintenance
- Non-contact sensing for stable performance and long service life
- Flow-proportional output with high accuracy and no zero drift
- Wide measuring range up to 1:30
- Low pressure loss and operating cost
- Analog, pulse/frequency and MODBUS outputs
- Engineering plastic or SS316 housing options
- Factory calibrated



TECHNICAL DATA

Measurement Medium

Water and aqueous solutions

Nominal Diameter

DN15 / DN20 / DN25 / DN32 / DN40 / DN50 / DN65

Accuracy

±2% R.S.

Repeatability

±0.5%

Response Time

<1 s

Medium Temperature

Plastic: -20...+70 °C / SS316: -30...+90 °C

Storage Temperature

-20...+70 °C

Pressure Rating

Plastic: 10 bar / SS316: 16 bar

Housing / Wetted Material

Plastic or SS316

Sealing Material

EPDM / Fluorine Rubber

Protection

IP65 / IP67

Electrical Connection

M12x1, 3-/4-/5-pin connector

Cable Length

1 / 2 / 3 / 5 m

Process Connection

Straight external thread, NPT external thread or bayonet connection

Output Options

Frequency, 0.5–4 V, 0–10 V, 4–20 mA, 2-wire 4–20 mA, Modbus RS485

Power Supply

5 VDC ±5%, 8–33 VDC or 12–33 VDC depending on output configuration

Maximum Current

<50 mA

Electrical Protection

Overvoltage and reverse polarity protection

MEASUREMENT RANGE

Size	Flow Rate Range (l/min)	Current Speed (m/s)	Frequency Output	
			Frequency Range(Hz)	K(f/l)
DN15	3.0 ~ 30	0.20~4.8	14~250	350
DN20	4.0 ~ 60	0.20~4.7	11~220	170
DN25	5.0 ~ 90	0.16~5.0	7~200	86
DN32	10.0 ~ 120	0.24~5.1	6~130	36
DN40	15.0 ~ 200	0.2~5.4	5~120	19
DN50	25.0 ~ 300	0.2~5	4~100	10



Instantaneous flow calculation :

① Frequency output Calculate using K coefficient

$$Q = F/K \times 60 \text{ (l/min)}$$

Q: Volumetric flow rate [l/min]

K: discharge Coefficient [f/l] F: frequency [Hz]

② Voltage output (0.5-4V) calculation

$$Q = \frac{V-0.5}{4} \times (Q_{\max} - Q_{\min}) + Q_{\min} \text{ (l/min)}$$

③ Voltage output (0-10V) calculation

$$Q = \frac{V}{10} \times Q_{\max} \text{ (l/min)}$$

Current output (4-20mA) calculation

$$\frac{I-4}{16} \times (Q_{\max} - Q_{\min}) + Q_{\min} \text{ (l/min)}$$

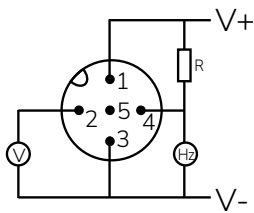
V: Output voltage [V]

I: output current [mA]

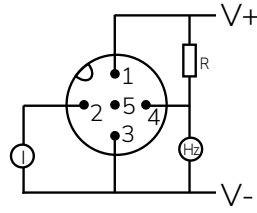
Q_{max}: Factory set maximum flow rate [l/min]

Q_{min}: Factory set minimum flow rate [l/min]

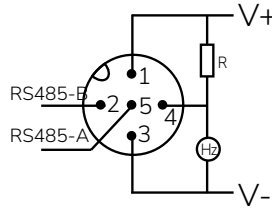
WIRING



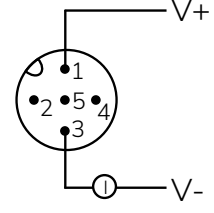
NPN frequency/
voltage output



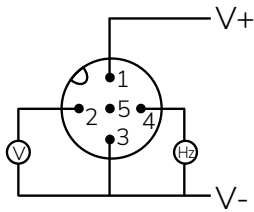
NPN frequency/current output
load resistance ≤ 300Ω



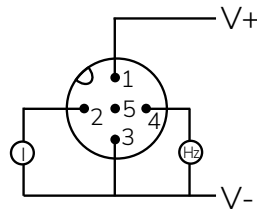
NPN frequency/ModBus485 output



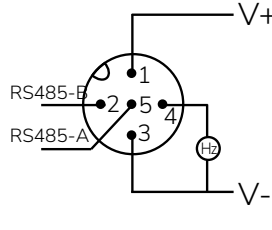
Two wire current output
load resistance ≤ 300Ω



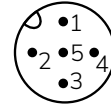
PNP frequency/
voltage output



PNP frequency/current output
load resistance ≤ 300Ω



PNP frequency/
ModBus485 output



Pin1: (brown) Power input positive pole
Pin2: (white) Voltage output/Current output/485 communication A
Pin3: (blue) Power input negative pole
Pin4: (black) frequency output
Pin5: (gray) Communication RS485-B
R: 1K Ω ≤ R ≤ 10K Ω, the maximum resistance value depends on the load



ORDERING

Model	
BMVA	Vortex Flow Sensor

Nominal Diameter	
006	DN6, with an external thread specification of 1/4
008	DN8, with an external thread specification of 3/8
010	DN10, with an external thread specification of 1/2
015	DN15, with an external thread specification of 3/4
020	DN20, with an external thread specification of 1
025	DN25, with an external thread specification of 1-1/4
032	DN32, with an external thread specification of 1-1/2
040	DN40, with an external thread specification of 2
050	DN50, with an external thread specification of 2-1/2
065	DN65, with an external thread specification of 3

Material Of Housing	
P	Plastic
S	Stainless steel

Interface Thread	
C	C represents G national standard external straight pipe thread
N	N represents NPT American standard external pipe thread

Frequency Output	
FV	Frequency output+voltage output (0-10V)
FA	Frequency output+current output (4-20mA)
FT	Frequency output+ModBus485, 5-33V power supply

