Vision
Turbine Flow Meters

Vision Turbine Meters

Models BV1000, BV2000 and BV3000 for Low Viscosity and Non-Aggressive Liquids

DESCRIPTION

The Vision Turbine Meters comply with the lead-free provisions of the Safe Drinking Water Act. Available models include meters that are:

- Bisphenol A (BPA)-free
- Certified to NSF/ANSI Standards 61 and 372

The meters are designed for flow measurement of low-viscosity, aggressive and non-aggressive liquids alike, including demineralized water, alkaline solutions, oils, salad oil, fuel/fuel consumption, beverages, water solutions and coolants.

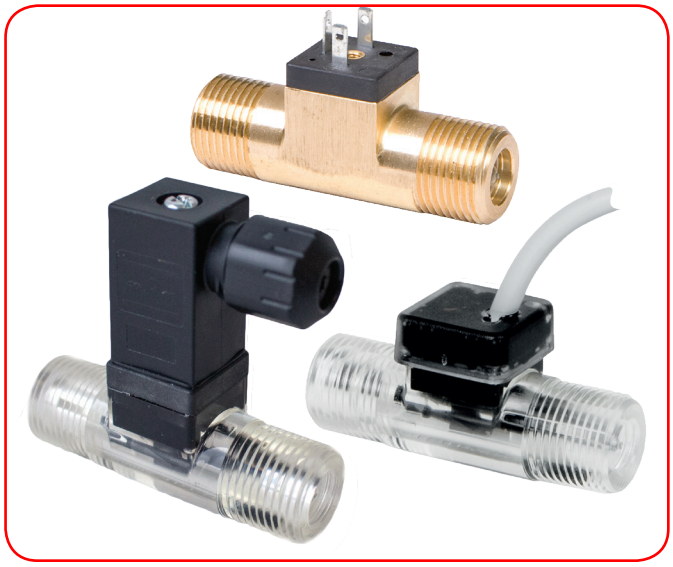
- The BV1000 flow range is 0.026….0.65 gpm (0.1…2.5 lpm)
- The BV2000 flow range 0.13…9.2 gpm (0.5…35 lpm)
- The BV3000 flow range 1.32…17.17 gpm (5…65 lpm)

The meter is especially suitable for washing machines, dishwashers, coffee machines, laser cooling plants, solar solutions, bakery machines, steam cooking machines in large kitchen plants, and CD or DVD cleaning.

INSTALLATION

Guidelines

- Check compatibility of liquid with the meter material.
- Install a 20…40 micron filter in front of the meter, if needed, to remove solid ingredients. Do not use on fluids with fibrous content or contamination.
- Install sensor into properly cleaned pipeline only.
- Check electrical connection according to the electrical wiring plan.
- Prior to installation, confirm system versus sensor specifications.
- Filter the system to 20…40 microns prior to the sensor, and minimize pulses/water hammer effects to prevent unit damage.
- Observe the arrow on the bottom of the unit for correct inlet and outlet port. Sensor can be mounted in any horizontal, vertical, or skewed orientation.
- Correctly installed, the sensor works maintenance-free.



Installing 1/4 in. and 3/8 in. NPT Units

1. Apply a small amount of thread sealant (Permatex "No More Leaks"®) or Teflon® tape to male threads.

NOTE: Make sure that the sealant does not enter into the turbine and bearing internal area.

2. Hand tighten unit in place.
3. Turn an additional 1/4 turn to seal. If the seal leaks, turn an additional 1/4 turn or until the leak stops. Do not exceed one additional turn total beyond hand tightening.

Installing G 1/4 in. and G 3/8 in. Units

The G 1/4 in. and G 3/8 in. units mate with a flat face seal washer, similar to a garden hose arrangement. This arrangement requires no sealants; hand tightening should be sufficient for sealing.

Badger Meter

VIS-UM-00021-EN-06 (February 2019)

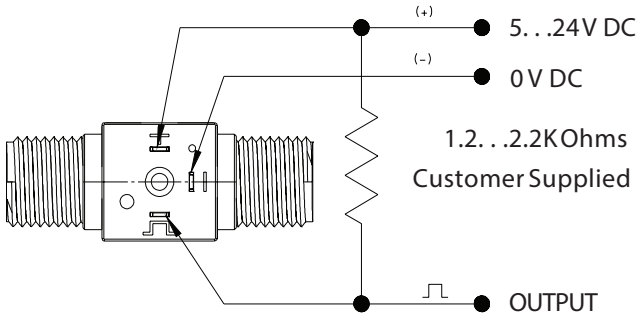
User Manual

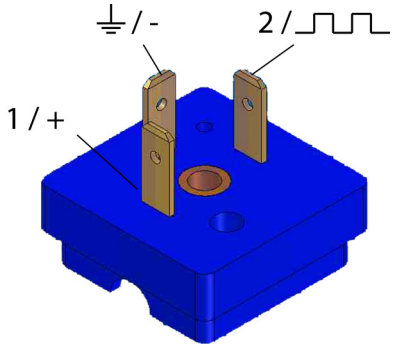
ELECTRICAL CONNECTIONS

Output Signal

The output signal is a square wave signal where the frequency is proportional to the flow rate. An external, user-supplied pull-up resistor is required to ensure that the open collector will sink less than 20 mA. Applying a current greater than 20 mA may damage the sensor.

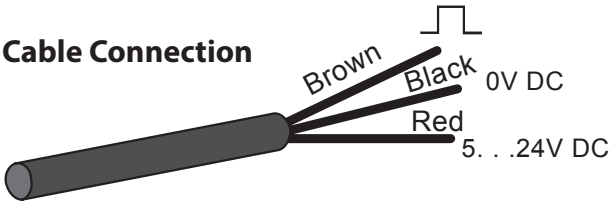
Wiring Diagram





With DIN Connector	
Function	**DIN Termination**
V+	1
–	⏚
Output	2

Cable Connection



SPECIFICATIONS

Model		BV1000*	BV2000						BV3000
		025	050	075	100	150	250	350	650
Flow Range		0.026…. 0.65 gpm	0.13… 1.3 gpm	0.13… 2.0 gpm	0.26… 2.7 gpm	0.26… 4.0 gpm	0.26… 6.6 gpm	0.53… 9.2 gpm	1.32…17.17 gpm
		0.1…2.5 lpm	0.5…5 lpm	0.5…7.5 lpm	1…10 lpm	1…15 lpm	1…25 lpm	2…35 lpm	5…65 lpm
K-factor		83,270 ppg	26100 ppg	17800 ppg	12500 ppg	8300 ppg	3785 ppg	2840 ppg	795 ppg
		22,000 ppl*	6900 ppl	4700 ppl	3300 ppl	2200 ppl	1000 ppl	750 ppl	210 ppl
DN mm		5 mm	6 mm	8 mm	6 mm	8 mm	8 mm	8 mm	12 mm
Operating Pressure		360 psi (25 bar)							—
Burst Pressure		2900 psi (200 bar)							~100 bar
Inlet / Outlet ports		1/4 in. NPT or G 1/4 in. (BSPP)	3/8 in. NPT or G 3/8 in. (BSPP)						3/4 in. NPT or G 3/4 in. (BSPP)
Operating Temperature		– 4…212° F (– 20…100° C)							
Accuracy		± 3% of reading							
Repeatability		< 0.50 % under the same operating conditions							
Viscosity		up to 16 cSt							
Electrical Connection		Round cable 3 x AWG 24 with free cable ends or *3-pin (2.8 × 0.5) mini DIN connector, EN 60529 * Mating connector is included.							
Filter		20…40 microns recommended							
Input Power		5…24V DC							
Power Consumption		~ 8 mA							
Output (Hz)		NPN sinking open collector							
Output Current		Max. 20 mA (Pull-up resistor required. See wiring diagram in User Manual.)							
Materials	**Housing**	PA12 Trogamid (NSF/ANSI 61 and 372 certified)							
		—	Brass CuZn38AI-C (complies with lead-free provisions of the Safe Drinking Water Act)						—
	Turbine	PA12 Ferrite							
	Bearings	Graphite/PTFE							
Weight		~0.35 oz (10 g)	~ 0.53 oz (15 g)						~1.23 oz (35 g)
Approvals		KTW and W270 approval for drinking water. FDA approved materials. Meets 21 CFR 175.300.							

* The previous generation of Model 025 had a K-factor of 18,500 ppl.

Pressure Drop Chart

	Type		Part Number															
	gpm	lpm	025		050		075		100		150		250		350		650	
	—	—	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
Pressure Drop Δp with Water Flow at 68° F (20° C)	**0.13**	**0.5**	0.29	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0.26	**1**	0.73	0.05	<0	<0	<0	<0	<0	<0	<0	<0	<0	<0	<0	<0	—	—
	0.40	**1.5**	2.18	0.15	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0.53	**2**	3.63*	0.25*	<0	<0	0.87	0.06	<0	<0	0.73	0.05	<0	<0	<0	<0	—	—
	1.32	**5**	—	—	1.74	0.12	2.90	0.20	0.73	0.05	2.90	0.20	0.73	0.05	0.73	0.05	0.00	0.00
	2.64	**10**	—	—	5.80	0.40	10.15	0.70	2.90	0.20	5.80	0.40	2.47	0.17	2.18	0.15	0.14	0.01
	3.96	**15**	—	—	13.05	0.90	—	—	5.80	0.40			3.92	0.27	3.63	0.25	0.29	0.02
	5.28	**20**	—	—	18.85	1.30	—	—	10.15	0.70	—	—	6.96	0.48	6.53	0.45	0.72	0.05
	6.60	**25**	—	—	—	—	—	—	—	—	—	—	9.43	0.65	8.70	0.60	1.02	0.07
	7.93	**30**	—	—	—	—	—	—	—	—	—	—	—	—	13.34	0.92	1.59	0.11
		35	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.03	0.14
		40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.61	0.18
		45	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.34	0.23
		50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.06	0.28
		55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.93	0.34
		60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.80	0.40
		65	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.82	0.47

*Value applies to 0.66 gpm (2.50 lpm)

OPERATION GUIDELINES

- Do not exceed the specific indications.
- The Vision Series meter is a volumetric measuring device. Any air/gas in the liquid will be included in measured volume.
- Correctly installed, the sensor is maintenance free.
- Do not blow out the turbine flow meter with compressed air. This may damage the bearings.

Control. Manage. Optimize.

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