

# User Manual



## 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
- BV1000 and BV2000 certified to NSF/ANSI/CAN 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.



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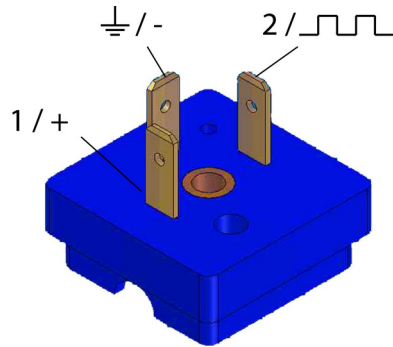
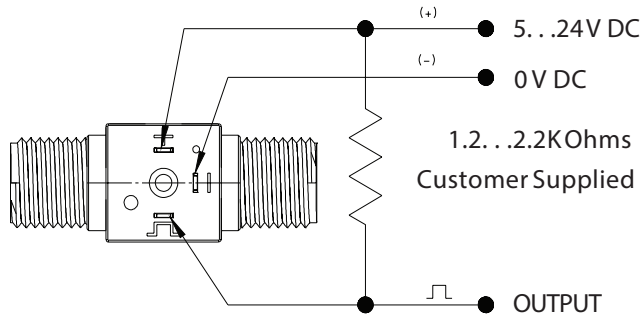
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## ELECTRICAL CONNECTIONS

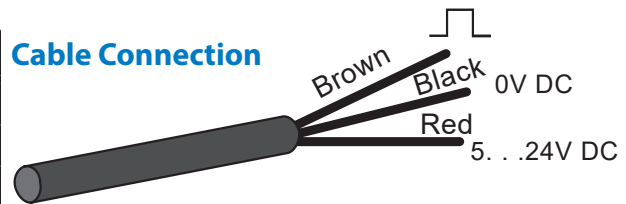
### Output Signal

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



## 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 for Trogamid Housing	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	362.5 psi (25 bar)								
Burst Pressure	1450 psi (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 LiYY 3 x 0.25 mm <sup>2</sup> with free cable ends or *3-pin (2.8 x 0.5) mini DIN connector, EN 60529 * Mating connector is included.								
Filter	20...40 microns recommended								
Input Power	5...24V DC								
Power Consumption	~ 1.6 mA								
Output (Hz)	NPN sinking open collector								
Output Current	Max. 20 mA (Pull-up resistor required. See wiring diagram in User Manual.)								
Materials	Housing	Trogamid (NSF/ANSI/CAN 61 and 372 certified)						—	
	Turbine	Brass CuZn38Al-C (complies with lead-free provisions of the Safe Drinking Water Act)						—	
	Bearings	PPS Ferrite Graphite/PTFE							
Weight	~0.35 oz (10 g)	~ 0.53 oz (15 g)						~ 1.23 oz (35 g)	
Approvals	KTW-BWGL; NSF/ANSI/CAN 61 and 372 for BV1000 and BV2000								
Certifications	RoHS and CE compliant								

\*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	<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	<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	
	3.96	15	—	—	13.05	0.90	—	—	5.80	0.40	—	—	—	—	3.92	0.27	3.63	0.25	
	5.28	20	—	—	18.85	1.30	—	—	10.15	0.70	—	—	—	—	6.96	0.48	6.53	0.45	
	6.60	25	—	—	—	—	—	—	—	—	—	—	—	—	9.43	0.65	8.70	0.60	
	7.93	30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13.34	0.92	
		35	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.03
		40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.61
		45	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.34
		50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.06
	55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.93	
	60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.80	
	65	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.82	

\*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.



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