

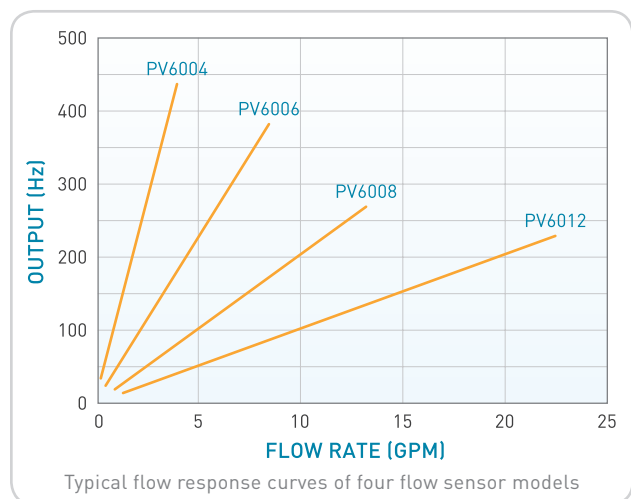
PV6000 Series

Compact PPA vortex flow meters with optional temperature measurement capability



- » Flow ranges from 0.9 to 85 LPM / 0.2 to 22 GPM
- » Accuracy of better than 3% of full scale
- » Liquid temperatures from -40 to 100°C / -40 to 212°F
- » Compatible with Galden®, Fluorinert™ and other advanced heat-transfer fluids
- » Rugged glass fiber-reinforced PPA construction
- » No moving parts – performance is not affected by contaminants in fluid!
- » 0–10 VDC or 4–20 mA analog output or pulse output for easy interfacing with your PLC
- » Directly interface to batching, data-logging and multi-channel controller accessories
- » Optional digital display for local indication of liquid flow rate
- » Specialized calibration available to account for viscosity effects of fluid and operating temperature
- » Optional temperature measurement capability with integrated Pt1000 RTD sensor
- » Materials of construction are FDA-approved for contact with food and drinking water

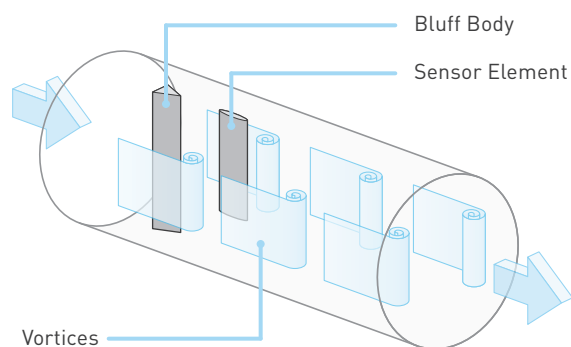
PV6000 Series Flow Meters utilize the vortex principle to provide accurate, reliable and cost-effective measurement of heat-transfer fluids and other liquids. An in-line sensor detects the frequency of vortices shed by a bluff body in the flow stream and generates a pulse output signal that is directly proportional to the instantaneous flow rate of the liquid.



How It Works

As liquid flows around a bluff body inside the flow channel, swirling vortices are formed and carried downstream at the velocity of the flowing liquid. Alternating localized high- and low-pressure zones characteristic of a vortex stream are detected by a piezoelectric crystal that produces a small pulse each time a vortex passes the sensor element. The number of vortices formed is directly proportional to the linear velocity of the liquid passing through the instrument.

Proteus Vortex Flow Meters are available with pulse, 4–20 mA or 0–10 VDC output, or with a compact digital display for local indication of the instantaneous liquid flow rate.



Cost-Effective Temperature Measurement

An optional Pt1000 RTD sensor integrated into the bluff body provides direct measurement of liquid temperature without requiring additional probes or fittings. Temperature information is transmitted as a resistance signal in instruments with pulse or current output or as 0–10 VDC in instruments with voltage output.

Flow Ranges and Connections

Base Model Number	PV6004 ¹	PV6006 ²	PV6008	PV6012
Flow Range (LPM)	0.90 to 15	1.8 to 32	3.5 to 50	5.0 to 85
Flow Range (GPM)	0.24 to 4.0	0.48 to 8.5	0.92 to 13	1.3 to 22
Frequency Range (Hz)	~31 to ~399	~24 to ~383	~20 to ~270	~14 to ~227
Connections	3/8" FNPT	3/8" FNPT	1/2" FNPT	3/4" FNPT

¹ For PV6004 models with a digital display, the upper flow limit is 10 LPM / 2.6 GPM.

² For PV6006 models with a digital display, the upper flow limit is 25 LPM / 6.6 GPM.

Flow Meter Specifications

Output Type	Pulse	Current	Voltage
Fluid Temperatures	-40 to 100 °C / -40 to 212 °F		
Ambient Temperature	-15 to 85 °C / 5.0 to 185 °F		
Kinematic Viscosities	0.3 to 7 cSt		
Operating Pressure Limit ¹	1200 kPa at 40 °C / 174 psi at 104 °F • 600 kPa at 100 °C / 87 psi at 212 °F		
Pressure Drop	< 3 psi at maximum flow rate		
Liquid Types	Water, water/glycol mixtures, Galden®, Fluorinert™, silicone oils, etc.		
Flow Sensor	Piezoelectric sensor element		
Output	Square pulse frequency ²	4–20 mA	0–10 VDC
Accuracy	@ < 50% of full scale: < 1.5% of full scale @ > 50% of full scale: < 3% of measured value		
Signal Delay	< 100 ms	< 2 sec	
Response Time	< 5 ms	< 500 ms	
Input Voltage	4.75–33 VDC	8–33 VDC	11.5–33 VDC
Current Consumption	< 6 mA	–	< 5 mA
Enclosure Protection	IP65		
Standards and Compliance	CE conformity (EN 61326-2-3:2006) • RoHS and REACH compliance Materials of construction: NSF-51 and NSF-61 approval		
Cable Length	2.0 m / 6.6 ft		

¹ Unrated. Note: Fast-closing valves can create high-pressure spikes (water hammer), which can damage the vortex sensor.

² The amplitude of the pulse frequency output is equal to the input voltage \pm 5%.

Temperature Sensor Specifications

Flow Sensor Output Type	Pulse	Current	Voltage
Temperature Sensor	Pt1000 RTD (DIN EN 60751 Class B)		
Measurement Range	-40 to 100 °C / -40 to 212 °F		-25 to 100 °C / -13 to 212 °F
Output Format	Resistance		0-8.3 VDC
Output Value	-40 °C = 842.7 Ω • 0 °C = 1000 Ω • 100 °C = 1385.1 Ω		$T\text{ °C} = (V_{\text{OUT}} \times 15) - 25$
Accuracy	@ T = 0 °C: ± 0.3 K @ T ≠ 0 °C: ± 0.3 K ± 0.005 * ΔT		± 0.5 K ± 0.005 * ΔT

Digital Display Specifications

Input Voltage	24 VDC ± 10%
Output – Flow*	N/A
Output – Temperature*	Resistance
Ambient Temperature	0 to 55 °C / 32 to 131 °F
Relative Humidity	35-85% (non-condensing)
Display Type	LCD (liquid crystal display)
Display Format	1 × 4 (line × characters)
Character Height	8.0 mm / 0.31 in

*Note: Digital displays indicate flow rate information *only*. For models with temperature measurement capability, temperature information is transmitted separately as a resistance output signal. Refer to the PV6000 Series Setup Guide for wiring information.

Wetted Materials

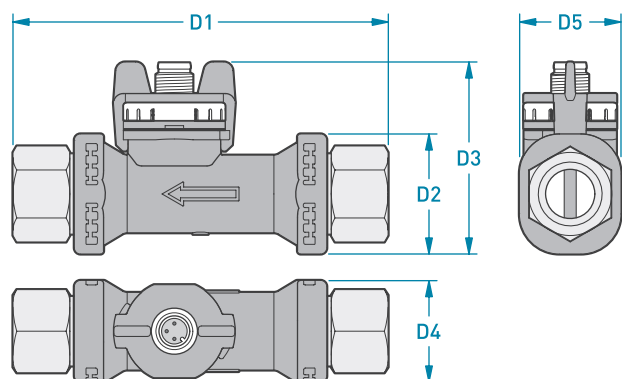
Flow Body	PPA (Polyphthalamide PA6T/6I - 40% Glass fiber)
Sensor Element	ETFE (Ethylene tetrafluoroethylene)
O-Rings	EPDM (Ethylene propylene diene monomer)
Fittings	303 Stainless steel

Model Numbers

		PV60	04	S	T	A
Base Model Number						
Flow Range	» 0.9-15 LPM / 0.24-4.0 GPM		04			
	» 1.8-32 LPM / 0.48-8.5 GPM		06			
	» 3.5-50 LPM / 0.92-13 GPM		08			
	» 5.0-85 LPM / 1.3-22 GPM		12			
Connection Type	» Stainless steel fittings			S		
Temperature Measurement	» Integrated RTD sensor				T	
	» No temperature sensor				[blank]	
Flow Output / Digital Display	» 0-10 VDC output					A
	» 4-20 mA output					AI
	» Digital display					D
	» Pulse output					[blank]

For a complete list of standard model numbers, refer to the PV6000 Series price list available at www.proteusind.com/pv6000.

Product Dimensions



MODEL	D1	D2	D3	D4	D5
PV6004	102.3 mm 4.0 in	32.9 mm 1.3 in	59.0 mm 2.3 in	28.9 mm 1.1 in	30.2 mm 1.2 in
PV6006	107.2 mm 4.2 in	32.9 mm 1.3 in	57.3 mm 2.3 in	28.9 mm 1.1 in	30.2 mm 1.2 in
PV6008	117.1 mm 4.6 in	39.0 mm 1.5 in	62.4 mm 2.5 in	33.0 mm 1.3 in	30.2 mm 1.2 in
PV6012	144.1 mm 5.7 in	43.0 mm 1.7 in	66.3 mm 2.6 in	37.4 mm 1.5 in	30.2 mm 1.2 in

Proteus: Customization Experts

Bring us your specifications and let our applications specialists create a flow management solution to meet your exact requirements.

Proteus' world-class calibration capability allows us to deliver instruments with temperature- and fluid-specific calibrations and viscosity characterization to help you control your most critical processes.

Contact us at tech@proteusind.com or (650) 964-4163 for immediate assistance!

PID Controllers

Florite process monitors and controllers provide accurate and reliable process control capability.

» www.proteusind.com/florite



Liquid Distribution Manifolds

Tofpine manifolds are configurable to create compact and cost-effective liquid distribution systems.

» www.proteusind.com/contact-us



Need More Information?

- » **Visit our website** Additional PV6000 Series product information, including dimensional drawings, prices, and more, is accessible at www.proteusind.com/pv6000.
- » **Contact us** Our flow management experts will be pleased to answer your questions! Email us at tech@proteusind.com or call us at (650) 964-4163.