

Pulsed Flow Sensor PFS-V4

Differential Pressure Flow Sensor

Date: 8.3.2021
Version: 2.0

Product summary

The Pulsed Flow Sensor V4 is a fast responding, chemical resistant volume flow sensor. It was developed to monitor the flow of pulsating pumps and fast switching valves. This reliable and fast sensor monitors your dosing process and is able to build volume integrals from nano- to milliliters

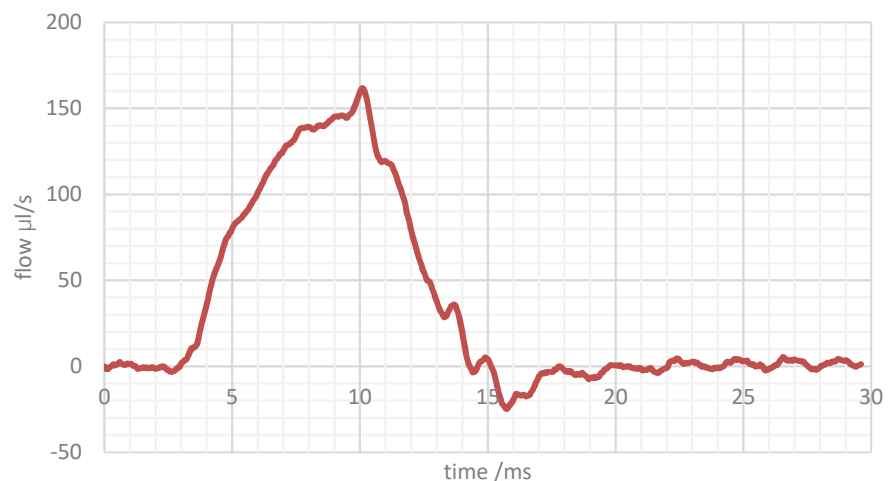


Features

- Only PEEK and FPM in contact with media!
- Flow measurements up to 100 ml/min (two orifice sizes)
- Volume integrals from 50 nl
- For water, oil, fuels and other low viscous media
- Insusceptible to gas bubbles
- Response time < 1 ms
- Pressure range from -1 to 3 bars
- Bidirectional flow measurement
- OEM-options

Measuring micro droplets

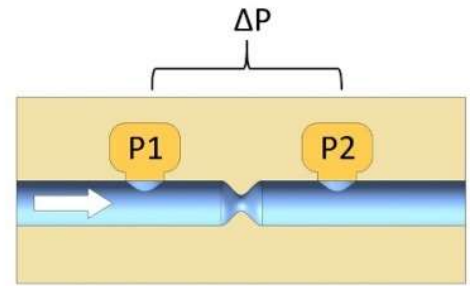
The PFS-V4 is able to measure micro droplets inline with a micro dosing valve or pump. The Graph on the right shows the flow of a 1 microliter droplet.



Function

The PFS measures the absolute pressure before and after a flow restrictor. From the pressure Difference a volume flow can be calculated.

The fast data Sampling (up to 20 kHz) and the flow calculation is done by the PFS-Controller. The PFS-Controller is an external device to drive valves and read the PFS sensor signals.



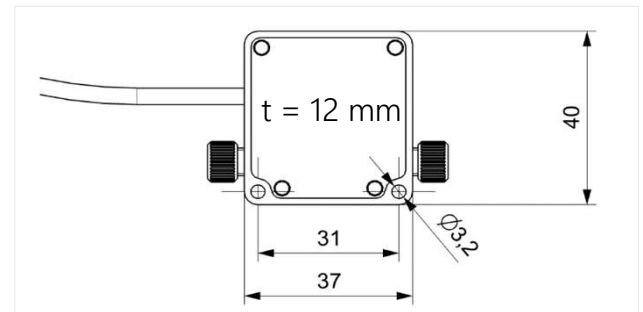
$$V' = f(\Delta P, \eta)$$

Technical Data

Materials in contact with media	PEEK, FPM (FFKM, EPDM instead of FPM on request)
Housing materials	PEEK, aluminum, stainless steel
Accuracy	2 % of measured Value (calibrated flow rate)
Repeatability	< 1 %
Output signal	The PFS has an analog output signal that is interpreted by the PFS-Controller.
Protection	IP 65
Media calibration	Viscosity and density set by user

Dimensions

Size	40 x 37 x 12 mm
Cable length	1 m
Mounting holes:	M3 (3.2 mm)
Weight with cable	70 g
Connector	10-pole
Tube diameters	1/8" and 1/16"
Fluid connectors	1/4"-28 UNF flat bottom



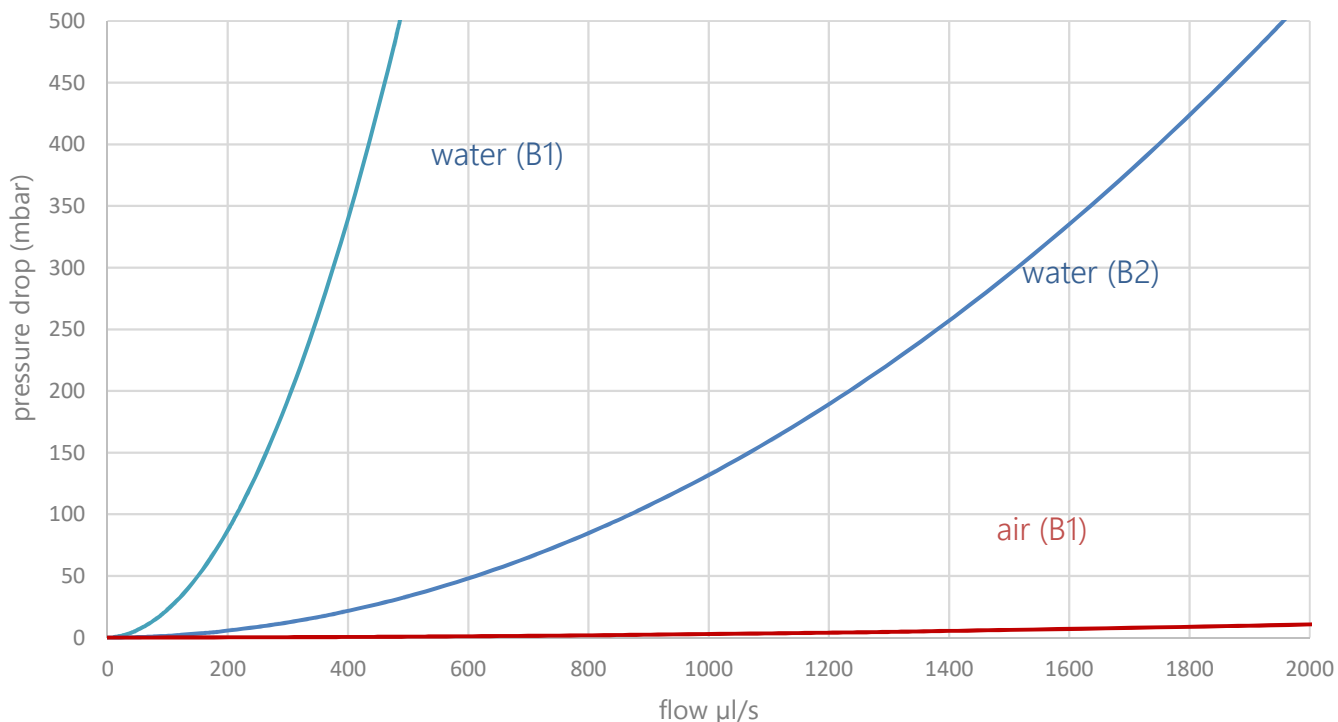
Versions

Version Nr.		PFS-V4-B1	PFS-V3-B2	
Parameters	Symbol			Unit
Flow rate	V'	0-30	0-100	ml/min
Calibrated flow rate	V'	3-30	10-100	ml/min
Operating pressure	pw	0-4	0-4	bar (absolute)
Burst pressure	pb	10	10	bar
Working temperature	Tw	10-40	10-40	°C
Flow detection response time	T63	1-2	1-2	ms
Orifice diameter	Dmin	300	500	µm
Flow channel diameter	D	1.5	1.5	mm
Kv-value water	Kv	0.004	0.01	m³/h

Pressure drop

Due to its differential pressure measurement principle, the PFS-V4 produces a flow dependent pressure drop. The chart shows a typical differential pressure for water.

Air shows no significant pressure loss in the specified flow rates. The influence of air bubbles on the flow therefore very small (only 1-5% of the actual air volume is measured).



Connectors

The PFS-V4 has flat-bottom ¼ -28 UNF threads for HPLC flangeless fittings. We recommend the idex XP-335 for 1/8" tubing or a D-646 swivel barb adapter for silicone tubing. Also ¼ -28 UNF to Luerlock adapters are available.



Setup with PFS-Controller

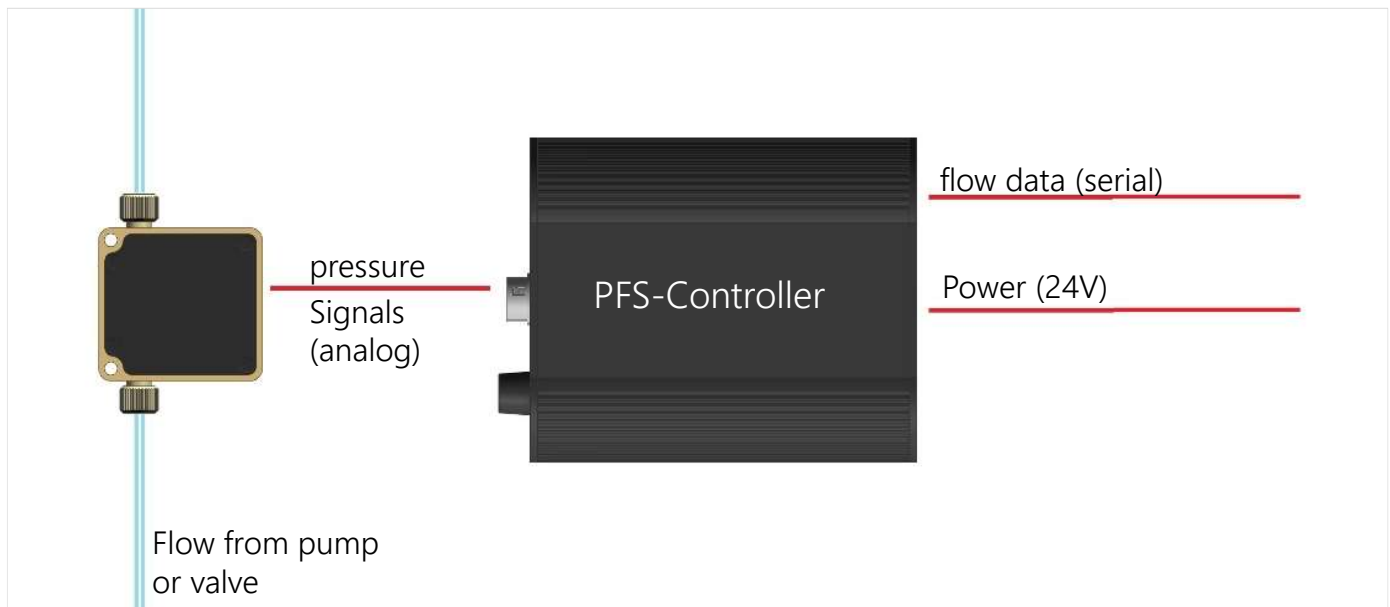
The PFS-V4 is interpreted by the ReseaTech PFS-Controller where the pressure signals are sampled at up to 20 kHz and a volume flow is calculated. The use without the PFS-Controller is not possible.

The PFS-Controller can be configured to produce customized output data, such as volume integrals.

If the PFS is used together with an electromagnetic valve, the valve can also be controlled with the PFS-Controller.

Sampling options

The PFS-V4 sensor signal is interpreted by the ReseaTech PFS-Controller. In this Setup it is possible to measure triggered events (e.g. droplets) with a sample rate of up to 20 kHz. Volume Integrals of defined measurement intervals are calculated automatically. For longer measurements a continuous measurement mode is provided.



The PFS-V4 does not match your requirements?

ReseaTech customizes the PFS-V4 for OEM integrations. Contact us for your specific size, flow rate, viscosity or output signal requirements.