

# MFS THERMAL BASED FLOW SENSOR

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## HIGH-ACCURACY FLOW MONITORING AND CONTROL



High accuracy liquid volumetric flow sensors for **ultra low flow rate monitoring**. The thermal based flow sensor comes with an M8 4 pin electrical connection, it can be controlled directly through the Elveflow software.

- ✓ 5 FLOW RATE RANGES
- ✓ HIGH CHEMICAL COMPATIBILITY

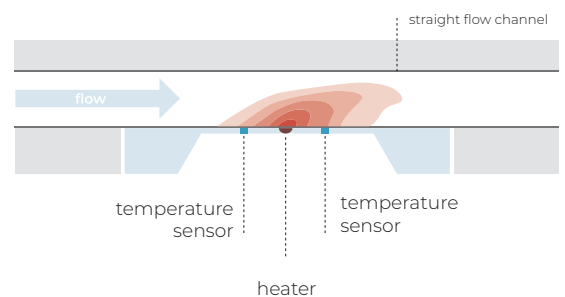
### UNIQUE PERFORMANCES

- > Calibrated flows from **0.07  $\mu\text{L}/\text{min}$  to 5,000  $\mu\text{L}/\text{min}$**
- > Sensor response time: **40 ms**
- > Resolution **down to 1.5 pL/s**
- > Wetted materials: **glass or quartz**

### APPLICATIONS

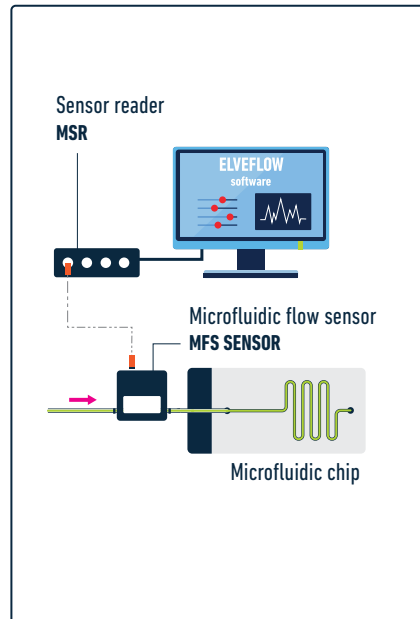
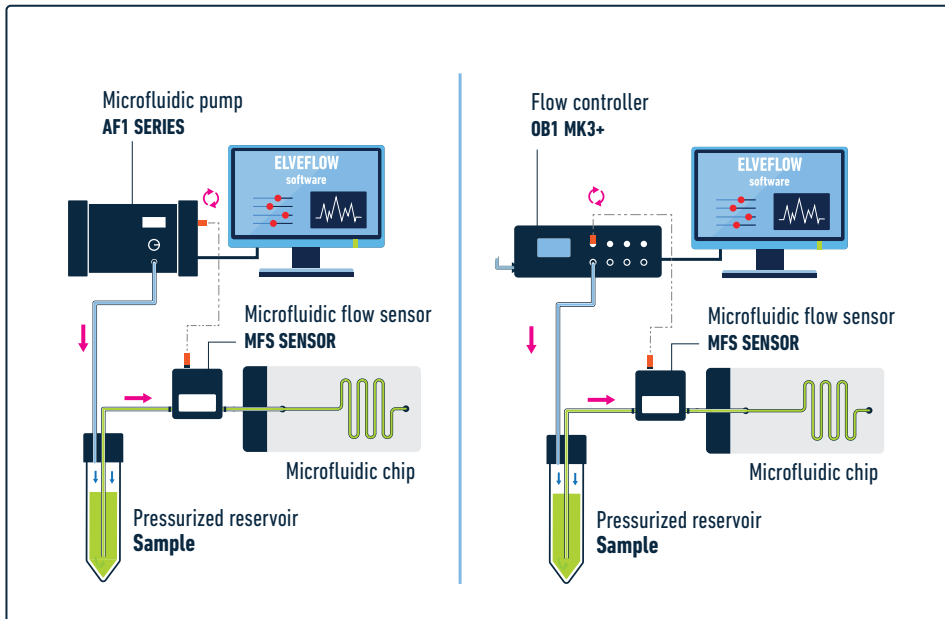
- > Couple with an OB1 flow controller for direct flow rate control
- > Bi-directional flow rate measurement (positive & negative)

### PRINCIPLE



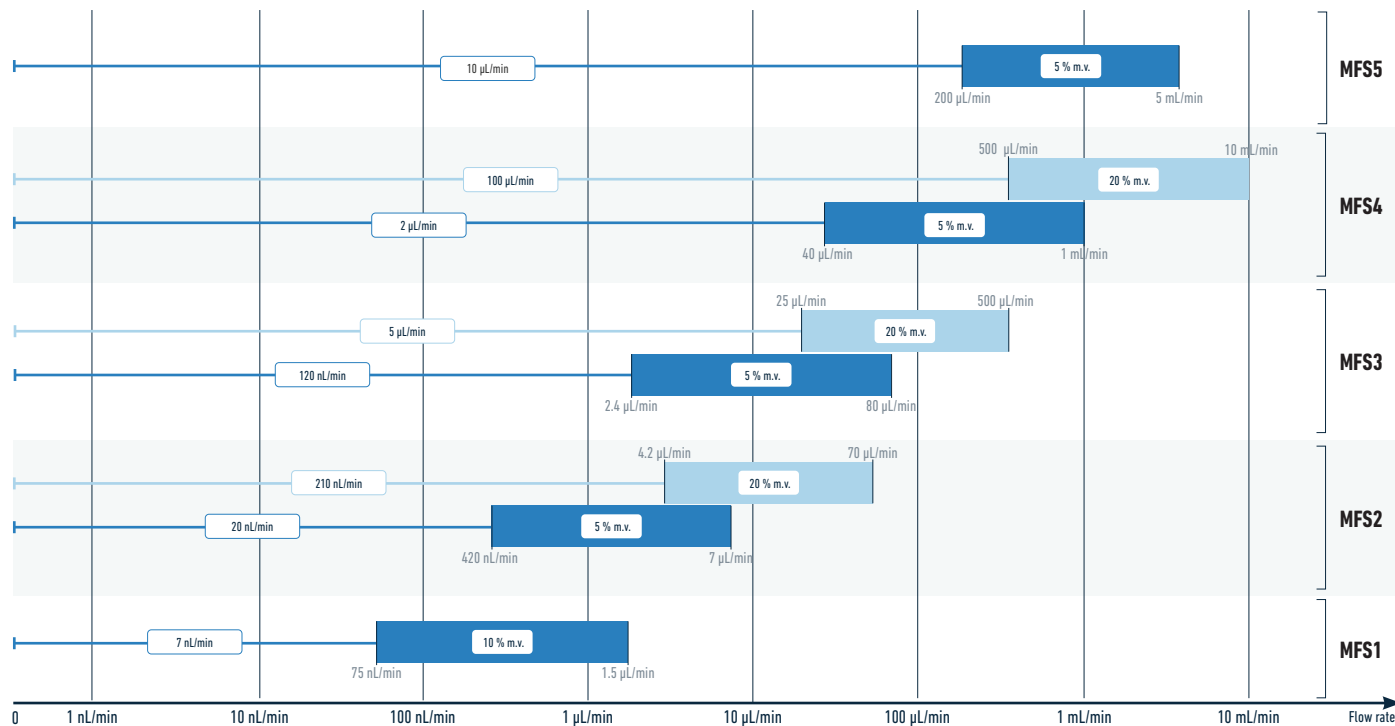
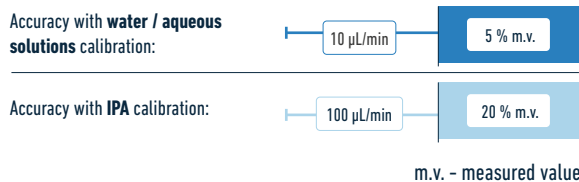
WITH ELVEFLOW FLOW CONTROLLERS: MONITORING + CONTROL

WITH SENSOR READER: MONITORING



TECHNICAL SPECIFICATIONS

MFS FLOW RATE RANGES AND ACCURACY



MFS FLOW SENSORS	MFS 1	MFS 2	MFS 3	MFS 4	MFS 5			
Media calibration	water / aqueous solutions	water / aqueous solutions	IPA	water / aqueous solutions	IPA	water / aqueous solutions	IPA	water / aqueous solutions
Flow rate range	0 to ± 1.5 µL/min	0 to ± 7 µL/min	0 to ± 70 µL/min	0 to ± 80 µL/min	0 to ± 500 µL/min	0 to ± 1 mL/min	0 to ± 10 mL/min	0 to ± 5 mL/min
Accuracy m.v. - measured value applies to negative values (bi-directional)	7 nL/min between [0 to 75] nL/min	20 nL/min between [0 to 0.42] µL/min	210 nL/min between [0 to 4.2] µL/min	120 nL/min between [0 to 2.4] µL/min	5 µL/min between [0 to 25] µL/min	2 µL/min between [0 to 0.04] mL/min	100 µL/min between [0 to 0.5] mL/min	10 µL/min between [0 to 200] µL/min
	10 % m.v. between [75 to 1,500] nL/min	5 % m.v. between [0.42 to 7] µL/min	20 % m.v. between [4.2 to 70] µL/min	5 % m.v. between [2.4 to 80] µL/min	20 % m.v. between [25 to 500] µL/min	5 % m.v. between [0.04 to 1] mL/min	20 % m.v. between [0.5 to 10] mL/min	5 % m.v. between [0.2 to 5] mL/min
Repeatability m.v. - measured value applies to negative values (bi-directional)	0.9 nL/min between [0 to 80] nL/min	3.5 nL/min between [0 to 0.7] µL/min	7 nL/min between [0 to 0.7] µL/min	8 nL/min between [0 to 1.4] µL/min	0.25 µL/min between [0 to 25] µL/min	0.2 µL/min between [0 to 0.04] mL/min	5 µL/min between [0 to 0.5] mL/min	1 µL/min between [0 to 0.2] mL/min
	< 1 % m.v. between [80 to 1,500] nL/min	0.5 % m.v. between [0.7 to 7] µL/min	1 % m.v. between [0.7 to 70] µL/min	0.5 % m.v. between [1.4 to 80] µL/min	1 % m.v. between [25 to 500] µL/min	0.5 % m.v. between [0.04 to 1] mL/min	1 % m.v. between [0.5 to 10] mL/min	0.5 % m.v. between [0.2 to 5] mL/min
Pressure drop at full scale flow rate, 23 °C	1 bar	3 mbar	60 mbar	1 mbar	7 mbar	< 1 mbar	5 mbar	< 1 mbar
Total internal volume	1 µL	1.5 µL		5 µL		25 µL		80 µL
Sensor inner diameter	25 µm	150 µm		430 µm		1.0 mm		1.8 mm
Tubing inner length	29 mm							
Operating pressure	200 bar			100 bar	15 bar		15 bar	
Burst pressure	400 bar			200 bar	30 bar		30 bar	
Microfluidic fitting type	UNF 1/4-28							
Wetted material	PEEK							
Internal sensor capillary material	Quartz				Borosilicate glass			

Non-contractual information, may be changed without notice.

**ELECTRICAL INPUT:** 8V  7 mA    **ANALOG OUTPUT:** 0 - 5 V    **FLOW SENSOR SIZE** (length x width x height): 58 x 52 x 23 mm    **WEIGHT:** 102 g

Excellent chemical resistance and bio-compatibility are ensured  
 Liquid Flow Sensor enables fast, and non invasive measurements of very low liquid flow rate below 5mL/min  
 The product comes fully calibrated for water  
 Flow calibration for methanol or other media is available on request (all data for medium H2O, 20°C, 1 bar unless otherwise noted)

The recommended storage temperature ranges from -10°C to +60°C  
 The operating temperature is +10°C to +50°C  
 The flow sensor shows bi-directional and linear transfer characteristics