ELVEFLOW
PLUG & PLAY MICROFLUIDICS

PRODUCT CATALOG 2021

WWW.ELVEFLOW.COM/MICROFLUIDIC-FLOW-CONTROL-PRODUCTS/

ELVEFLOW PRODUCT CATALOG 2020 **REF:** PC21-0204

STATE OF THE ART

microfluidic instrumentation for all

Elveflow is an Elvesys brand. We build premium flow handling instruments since 2012. We are proud to have provided **more than 2,000 systems** so far to both academics and industrial users.

Our product line is built around **the best seller OB1 flow controller** and includes everything for accurate liquid handling. All our instruments can be controlled simultaneously using our **software** and **Software Development Kits** allowing for a full automation of your system.

Our instruments are **modular**, **upgradable** and come in a **standard** or **OEM** version.

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172 Rue de Charonne,
75011 Paris
France

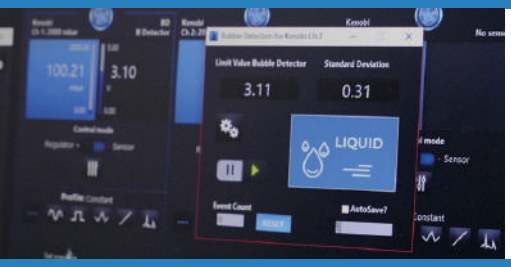
PRODUCTS

FLOW CONTROL SYSTEMS

MEASUREMENT & DETECTION

OEM & CUSTOM

SOFTWARE



FREE SOFTWARE

PACKS & ACCESSORIES

ELVEFLOW OVERVIEW

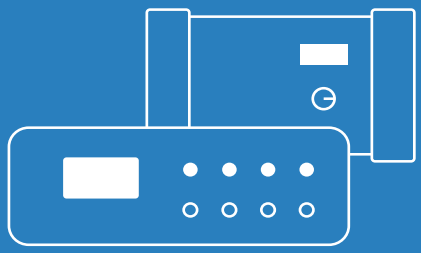
Elveflow focuses on the development of high performance, **plug and play flow control systems** perfect for microfluidic research. We provide the only microfluidic flow control systems using **Piezo technology** allowing blazing fast flow changes in your microdevice.

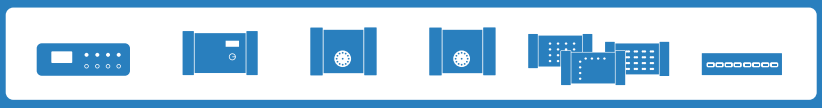
contact@elveflow.com

MULTIDISCIPLINARY EXPERTS HERE TO HELP YOU

Our **multidisciplinary team** provides a wide range of development and services. Our management is composed of talented engineers, physicists and biologists in microfluidics totaling more than 70 peer reviewed publications, 400 citations and 10 microfluidic patents.

ELVE FLOW
PLUG & PLAY MICROFLUIDICS





PRODUCTS

FLOW CONTROL SYSTEMS

OB1 MK3+

MULTI CHANNEL PRESSURE & VACUUM CONTROLLER

ELVEFLOW.COM/MICROFLUIDIC-FLOW-CONTROL-PRODUCTS/FLOW-CONTROL-SYSTEM/PRESSURE-CONTROLLER/

★ BEST SELLER

DON'T LET YOUR PUMP LIMIT YOUR RESEARCH

BEST RESPONSIVENESS AND ACCURACY ON THE MARKET

WARRANTY 2 YEARS WARRANTY

The OB1 MK3+ is a **high performance** microfluidic pressure and flow controller. Customize your unit: pick the number of channels you like and **choose for each of them the pressure and vacuum ranges** among the 5 options available.

- ✔ **MODULAR**
- ✔ **UPGRADABLE**
- ✔ **SOFTWARE INCLUDED**

UNIQUE PERFORMANCES

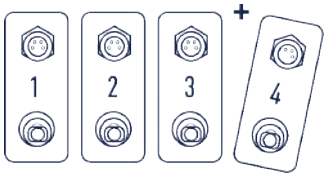
- > Pressure stability **0.005 % FS**
- > Response time **9 ms**
- > Pressure resolution **0.003 % FS**
- > Settling time **down to 35 ms**

PIEZOELECTRIC TECHNOLOGY

CUTTING EDGE PIEZO CONTROL FOR MICROFLUIDICS

APPLICATIONS

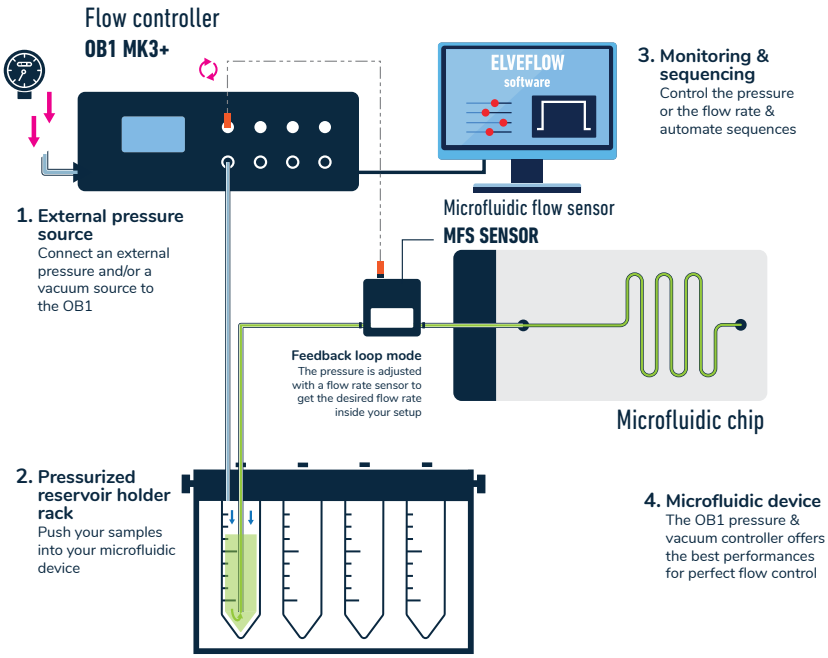
- > Digital microfluidics
- > Flow chemistry & polymer synthesis
- > Cell culture: cell perfusion, sequential injection
- > Droplet-sequencing: RNA sequencing
- > Organ on chip
- > Enhanced oil recovery
- > Lab on a chip



CHOOSE FROM 1 TO 4 CHANNELS, AND MORE...

Get a one-channel today and add more channels later

HOW IT WORKS



> To **control flow rate or pressure** at any given point of your circuit, you can perform a **feedback loop** with the flow rate. The same can be done with pressure using a pressure sensor.

1 External pressure source

Connect a pressure and/or a vacuum source to your OB1 (required).

Example: Gas cylinder, lab pressure line, compressor (see more p.40)

2 Sample

Depending on your choice, the liquids can be pulled into the reservoir or be pushed from there since the OB1 can use pressure or vacuum within the same channel.

3 Monitoring & sequencing

Automate pressure and flow control using the Elveflow software on your computer.

4 Microfluidic devic

The OB1's pressure & vacuum features offer precise sample handling, and provide full control over the injection.

FEATURES & BENEFITS

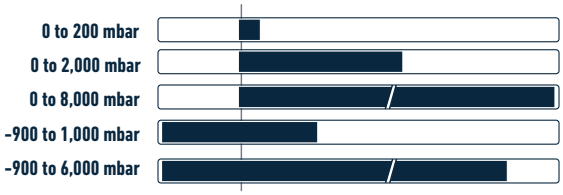
- **Short settling time**
  Operate blazing fast changes in any microdevice with our Piezo technology
- **Highest flow stability**
  Ensure superior flow performance over a large flow range, with pressure stability down to 10 µbar
- **Accurate flow control**
  Input a flow value into the software. Flow regulation down to 7.5 nL/min

- **Software automation**
  Control all instruments through a single dashboard. Powerful script module to automate control and injection over days
- **Create your own program**
  Software Development Kits (C++, Python, MATLAB® and LabVIEW® libraries)
- **Enhanced data saving**
  Up to 10 ms sampling rate to take out the best of your results

- **Easy to install and use**
  Start out of the box and set everything up within minutes
- **Customizable**
  Choose from any number of channels among the five pressure ranges available
- **Upgradable**
  Get a one-channel today and add more channels later

PRESSURE RANGES

FOR EACH CHANNEL: 5 PRESSURE RANGES AVAILABLE



TECHNICAL SPECIFICATIONS

OB1 MK3+ CHANNEL PRESSURE RANGE	0 to 200 mbar[1] (0 to 2.9 psi)	0 to 2,000 mbar[1] (0 to 29 psi)	0 to 8,000 mbar[1] (0 to 116 psi)	-900 to 1,000 mbar[1] (-13 to 14.5 psi)	-900 to 6,000 mbar[1] (-13 to 87 psi)
Pressure stability [2]	**0.005 % FS** 10 µbar (0.00014 psi)	**0.005 % FS** 100 µbar (0.0014 psi)	**0.006% FS** 500 µbar (0.007 psi)	-900 to 500 mbar: **0.005 % FS** 100 µbar (0.0014 psi) 500 to 1,000 mbar: **0.007 % FS** 150 µbar (0.0021 psi)	-900 to 2,000 mbar: **0.005 % FS** 350 µbar (0.05 psi) 2,000 to 6,000 mbar: **0.007 % FS** 525 µbar (0.076 psi)
Response time [3]	down to 9 ms				
Settling time [4]	down to 35 ms				
Minimum pressure increment	**0.003 % FS** 6.1 µbar - 0,000085 ps	**0.003 % FS** 56 µbar - 0,00085 psi	**0.003 % FS** 240 µbar - 0,0035 psi	**0.0032 % FS** 61 µbar - 0,00085 psi	**0.003 % FS** 210 µbar - 0.003 psi
Input pressure	**1.5 bar - 10 bar** non corrosive, non explosive, dry and oil-free gases, e.g. air, argon, N2, CO2, ...				
Input vacuum [5]	/			any value from 0 to -1 bar	
Liquid compatibility	no liquid should enter the OB1 any aqueous or organic solvent, oil or biological sample solution can be propelled				

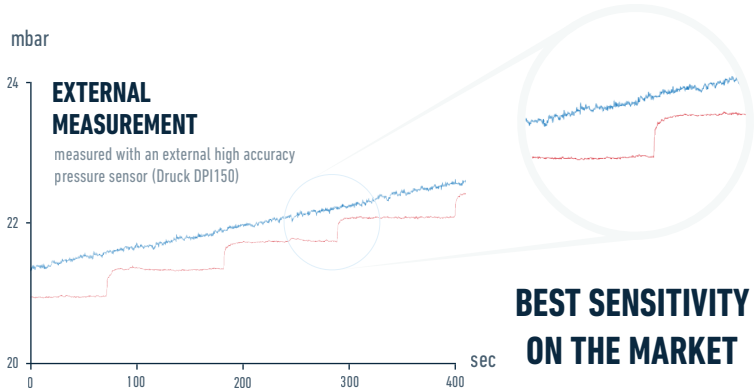
Non-contractual information, may be changed without notice.

POWER CONSUMPTION (maximum): 12 W **CASE DIMENSIONS** (length x width x height): 240 x 223 x 80 mm **WEIGHT:** 1.7 kg to 3.04 kg (3.1 Kg) **TTL TRIGGER:** input 5V / output 3,3V

(1) Max pressure value might vary by +/- 2.5% (2) Pressure stability (standard deviation) measured over the full pressure range with an external high accuracy pressure sensor (Paroscientific MODEL 745) (3) Depending on your computer's operating system (4) Volume dependent – Measurement done on 12 mL reservoir for a set point from 100 to 200 mbar (5) The vaccum channels can be used without vacuum source if only positive pressures are desired.

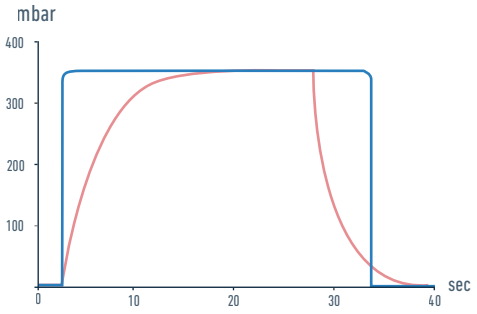
SENSITIVITY RAMP 21 mbar TO 23 mbar

(0.01 mbar steps)



FLOW CONTROL REACTIVITY

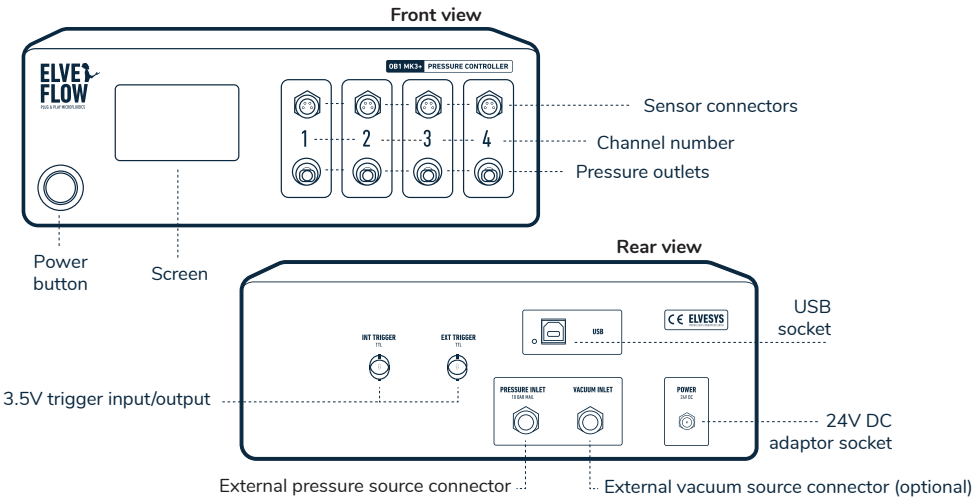
High precision compared to a syringe pump



They trust Elveflow's **performances** and **quality**:

Alphabet · BIO-RAD · GE Healthcare · gsk · illumina · Medtronic · NASA · SANOFI · TOTAL · Griffith UNIVERSITY · KAIST · Massachusetts Institute of Technology · PRINCETON UNIVERSITY · Stanford University · UCL Université catholique de Louvain

INSTRUMENT DESCRIPTION



PRESSURE RANGE COLOR CODE

- YELLOW: 0 to 200 mbar
- BLUE: 0 to 2,000 mbar
- PURPLE: -900 to 1,000 mbar
- ORANGE: -900 to 6,000 mbar
- GREY: 0 to 8,000 mbar

PRODUCTS & SERVICES

ELEMENTS PROVIDED BY ELVEFLOW	INCLUDED	OPTIONAL
Software & libraries Control all Elveflow instruments with the same smart interface	•	
OB1 connection kit A complete set of accessories fitted for the OB1 flow generator		•
Reservoirs Gas tight reservoirs with ergonomic fluidic connection		•
Flow sensors A line of sensors to monitor very low liquid flow rates		•
Compressor A safe & secure pressure source for the OB1 pressure controller		•
Service The Elveflow expertise & support to offer you individually tailored solutions	•	

SOFTWARE FEATURES

ELVEFLOW.COM/MICROFLUIDIC-FLOW-CONTROL-PRODUCTS/FLOW-CONTROL-SYSTEM/ELVEFLOW-SOFTWARE/

- Pressure & flow rate **visualization** and **recording**
- **Programming** & **automation** of complex sequences
- Easy alternative instrument control through the provided **C++, Python, MATLAB®** and **LabVIEW® libraries**

NATIONAL INSTRUMENT

National Instrument is our technological partner for embedded electronics

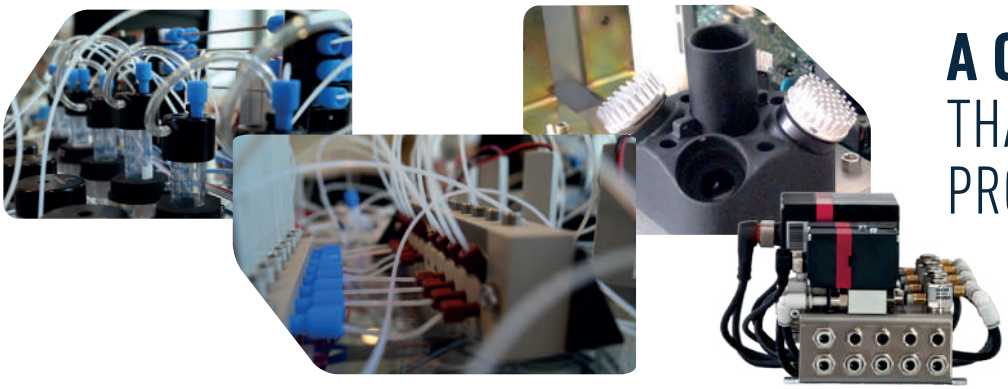
More information:

ESI - FREE SOFTWARE
ELVEFLOW SMART INTERFACE - ALL INSTRUMENTS P.37

OEM - ORIGINAL EQUIPMENT MANUFACTURER

CUSTOM FLUIDIC SYSTEMS

ELVEFLOW.COM/MICROFLUIDIC-FLOW-CONTROL-PRODUCTS/OEM-CUSTOM-FLUIDIC-SYSTEMS/



A CUSTOM SOLUTION THAT FITS YOUR PROJECT PERFECTLY

Elveflow provides a **comprehensive line of OEM fluidic components** that can be integrated into your products. Our OEM components allow a seamless integration thanks to their **small footprint** and **easy interfacing**. A **simple serial USB connection** allows interfacing through our API, the native in/out triggers provide optimum interactions and we use standard fittings for pneumatic and fluidic connections.

We provide a dedicated software with all fluidic OEM products, as well as libraries for a **customized software development** (C++, Python, MATLAB® and LabVIEW® libraries).

SERVICES

- Personalized expert advice for our clients and partners
- Creation of technical specifications
- Risk management and analysis
- Development and production of mechanics, electronics and software
- Prototyping
- Beta testing, troubleshooting and continuous improvement
- Production, from limited series to large scale
- Maintenance, support and training
- Upgrades of your systems

WHY CHOOSE US AS YOUR OEM PARTNER?

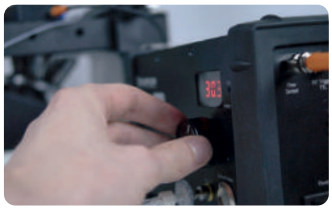
- **A receptive and efficient partner** – We are well aware of the importance of keeping up with your fast-changing market.
- **A soft intellectual property policy** – We believe that intellectual property should never be an obstacle to innovation.
- **A trusted manufacturer** – High profile companies already trust us for their scientific instruments. Why not you?
- **A proven track record** – Our team carried out successfully several projects taking into account challenging constraints to end up with the best solutions for our partners.

AF1 SERIES

SINGLE CHANNEL AUTONOMOUS PUMP

ELVEFLOW.COM/MICROFLUIDIC-FLOW-CONTROL-PRODUCTS/FLOW-CONTROL-SYSTEM/HIGH-ACCURACY-PRESSURE-PUMPS/

AN AUTONOMOUS PUMP DESIGNED TO MATCH THE NEEDS OF ALL MOBILE SCIENTISTS



The AF1 is a high performance **autonomous pressure and flow controller**. It comes in **three different ranges** with an integrated pressure sensor and vacuum source. It is compatible with the Elveflow software.

- ✔ **STANDALONE UNIT**
- ✔ **NO COMPUTER NEEDED**

UNIQUE PERFORMANCES

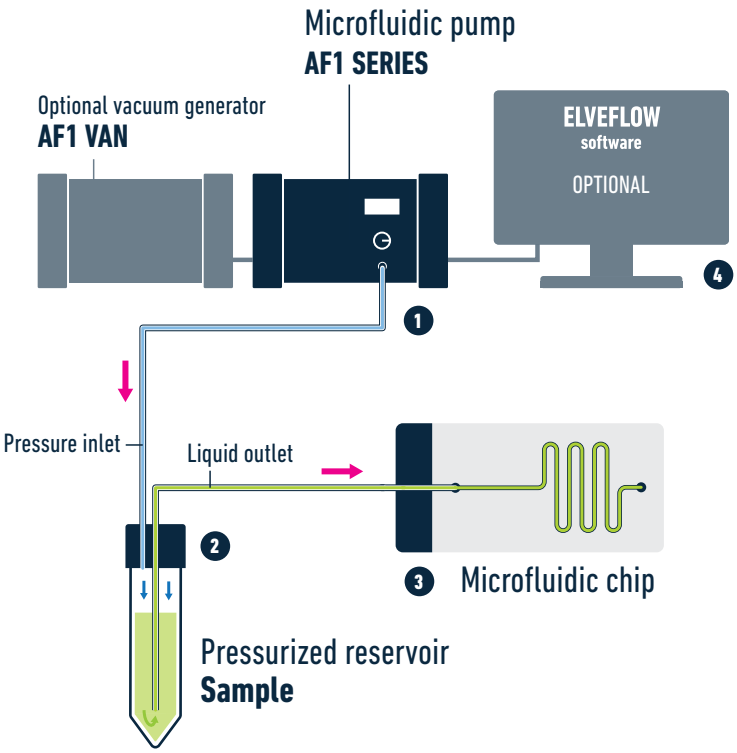
- > Pressure resolution **100 µbar**
- > Pressure stability **100 µbar**
- > Response time **50 ms**
- > Settling time **down to 100 ms**

APPLICATIONS

- > Digital microfluidics: micro-droplets, anisotropic particles, double emulsions generation & handling
- > Beads and particles manipulation
- > Fast liquid sample switching
- > Cell culture experiments under medium perfusion

*The AF1 cannot be used as a pressure source for the OB1 MK3+.

HOW IT WORKS



1 **AF1 Pressure and vacuum generator**
Fast and accurate pressure and vacuum control for your system.

2 **Sample**
Push and pull liquid from the reservoir to your microfluidic chip.

3 **Microfluidic device**
The liquid is smoothly and precisely injected into the microfluidic device.

4 **Monitoring**
Control pressure and vacuum using your computer or the instrument's front panel dial.

> To **control flow rate or pressure** at any given point of your circuit, you can perform a **feedback loop** with the flow rate. The same can be done with pressure using a pressure sensor.

FEATURES & BENEFITS

- **Short settling time**
  Piezo technology allowing a blazing fast flow change in any microdevice
- **High flow stability**
  Pressure stability down to 100 µbar ensuring a superior flow performance over a large flow range
- **Accurate flow control**
  Input a flow value into the software. Flow regulation down to 7.5 nL/min

- **Software automation**
  Control all instruments through a single dashboard. Powerful script module to automate control and injection over days
- **Create your own program**
  Software Development Kits (C++, Python, MATLAB® and LabVIEW® libraries)
- **Enhanced data saving**
  Up to 10 ms sampling rate to take out the best of your results

- **Easy to install and use**
  Start out of the box and set everything up within minutes
- **Several pressure range**
  Choose among the three pressure ranges available
- **Dial control**
  Monitor and control pressure using the front panel dial and screen

TECHNICAL SPECIFICATIONS

AF1 PREMIUM	AF1 200	AF1 1,600	AF1 DUAL
Pressure range	**0 to 200 mbar**[1] (0 to 2.9 psi)	**0 to 1,600 mbar** [1] (0 to 23 psi)	**-700 to 1,000 mbar** [1] (-10 to 14 psi)
Type of pressure	positive	positive	negative & positive
Minimum pressure increment	**0.006 % FS** 12.2 µbar (0.0007 psi)	**0.006 % FS** 122 µbar (0.007 psi)	**0.006 % FS** 122 µbar (0.007 psi)
Pressure stability [2]	**100 µbar** 0.05 % FS (0.0014 psi)	**1 mbar** 0.05 % FS (0.014 psi)	**1 mbar** 0.05 % FS (0.014 psi)
Response time [3]	50 ms		
Settling time [4]	down to 100 ms		
Supply pressure (min - max)	integrated pressure pump no pressure source needed		integrated pressure & vacuum source no pressure & vacuum source needed
Liquid compatibility	any aqueous or organic solvent, oil, or biological sample solution can be propelled		
Output connectors	stainless steel female luer lock		

Non-contractual information, may be changed without notice.

POWER CONSUMPTION: 15 W (100 V to 240 V - 50 Hz to 60 Hz) **CASE DIMENSIONS** (length x width x height): 220 x 130 x 130 mm **WEIGHT:** 1.7 kg **TTL TRIGGER:** input/output 5 V

(1) Maximum pressure might vary by +/- 2.5% (2) Output stability measured at 150 mBar with an external high accuracy pressure sensor (Druck DPI150) (3) Depending on user computer operating system (4) Volume dependent – Measurement done on 12 mL tank for a set point from 0 to 200 mbar

PRODUCTS & SERVICES

ELEMENTS PROVIDED BY ELVEFLOW	INCLUDED	OPTIONAL
Software & libraries Controll all Elveflow Instruments with the same smart interface	•	
AF1 connection kit A complete set of accessories fitted for the AF1 pressure generator		•
Reservoirs Gas tight reservoirs with ergonomic fluidic connection		•
Flow sensors A line of sensors to monitor very low liquid flow rates		•
Service The Elveflow expertise & support to offer you individually tailored solutions	•	

Non-contractual information, may be changed without notice

They trust Elveflow's **performances** and **quality**:

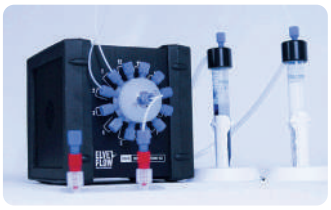
MUX DISTRIB

12-WAY BIDIRECTIONAL VALVE

ELVEFLOW.COM/MICROFLUIDIC-PRODUCTS/MICROFLUIDICS-FLOW-CONTROL-SYSTEMS/MUX-DISTRIB/

Included in our
SEQUENTIAL FLUID INJECTION PACK
ELVEFLOW.COM/MICROFLUIDIC-PRODUCTS/MICROFLUIDICS-APPLICATION-PACKS/SEQUENTIAL-FLUID-INJECTION-PACK/

A ROTARY VALVE DESIGNED TO EASILY EXECUTE FAST MEDIUM SWITCHES



The Sequential Injection Valve is a **bidirectional 13-port/12 way** which can be used as a selector to inject sequentially one liquid sample into **twelve different lines** or twelve liquid samples into one line.

- ✔ **INJECTION OF UP TO 12 LIQUIDS**
- ✔ **NO CROSS CONTAMINATION**

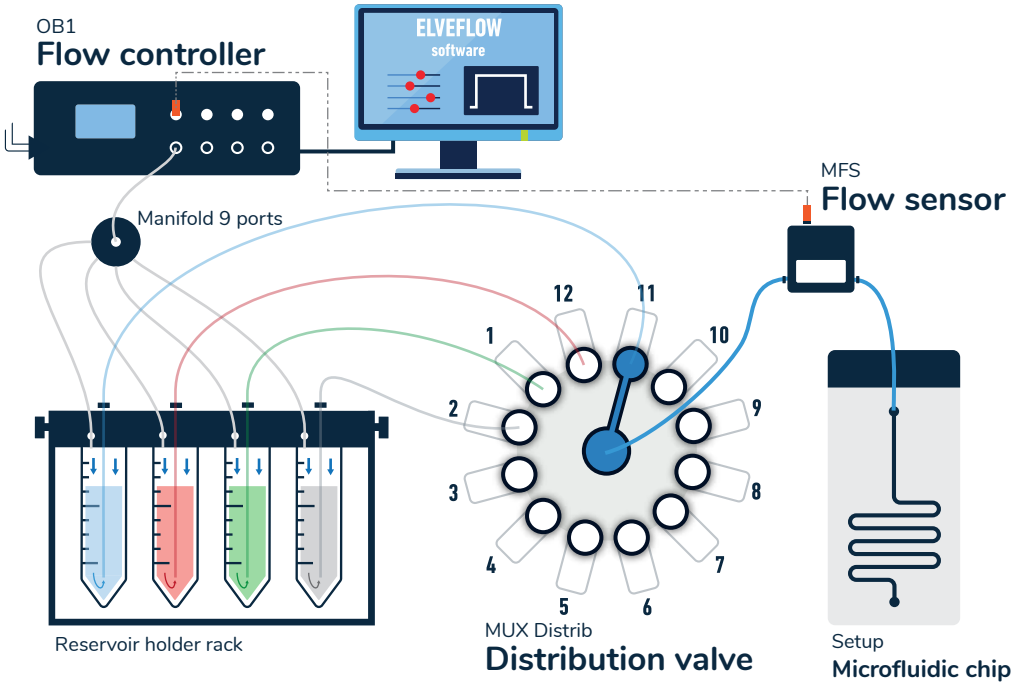
UNIQUE PERFORMANCES

- > Typical mechanical response time for port-to-port movement **156 ms**
- > Easy setup: standard **¼-28 fluidic fittings**
- > Lowest internal volume: **3.5 µL**
- > **High chemical compatibility** (wetted materials: PCTFE, PTFE)
- > Possibility to chose the **sense of rotation**

APPLICATIONS

- > Cell culture on chip
- > Cell response to medium change
- > Drug screening
- > Toxicity tests
- > Sensor testing & calibration
- > Reagent switch for flow chemistry

HOW IT WORKS



TECHNICAL SPECIFICATIONS

MUX DISTRIB		SPECIFICATIONS
Performances	Port to port switching time (ms)	156 ms
	Max. supported pressure	7 bar
	Internal diameter	0.5 mm
Power supply	Input voltage range, AC	100 V to 240 V
	AC supply frequency	50 Hz to 60 Hz
	Max current consumption	2A peak
	Power consumption (max)	36 W
	Power supply voltage	18-24V DC
Mechanical specifications	Valve type	12 positions / 13 ports rotative valve
	Fluidic connectors	Standard 1/4-28 UNF, flat-bottom
	Operating temperature	5 °C to 40 °C
	Operating humidity	20-70% non condensing
	Wetted materials	PCTFE and PTFE
	Dead volume(1)	None
Software	Computer specifications	USB 2.0 port, Intel Pentium II 500 MHz, 1 Go Hard Disk space, 2 Go RAM Windows XP and newer, 32/64 bit. LabVIEW® 2011 is required when using LabVIEW® libraries.
	Connection type	USB
	Provided elements	C++, Python, MATLAB® and LabVIEW® libraries

(1) Volume that is stuck in the system (dead end), which is not clearly swept and relies on diffusion to clear out

MUX DISTRIB DIMENSIONS without connectors (length x width x height): 133 x 156 x 133 mm

Non-contractual information, may be changed without notice.

MUX RECIRCULATION

6-PORT/2-POSITION VALVE

ELVEFLOW.COM/MICROFLUIDIC-PRODUCTS/MICROFLUIDICS-FLOW-CONTROL-SYSTEMS/MUX-RECIRCULATION/

Included in our
RECIRCULATION PACK
ELVEFLOW.COM/MICROFLUIDIC-PRODUCTS/MICROFLUIDICS-APPLICATION-PACKS/ONE-WAY-RECIRCULATION/

MAKE LONG-TERM EXPERIMENTS EASIER AND MORE RELIABLE

The Recirculation Valve is a **6-port/2 position** microfluidic valve allowing to perform switches between two setup configurations. Applications are: **stable unidirectional fluid recirculation** and **sample injection.**

- ✔ **PRECISE VOLUME INJECTION**
- ✔ **LONG RUN RECIRCULATION**

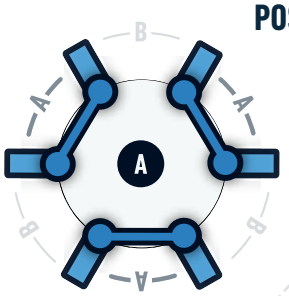
UNIQUE PERFORMANCES

- > Recirculate a fluid in a **closed loop**
- > Port-to-port switching time: **180 ms**
- > **High chemical compatibility** (wetted materials: PCTFE and PTFE)
- > No sample **cross-contamination** & **no backflow**

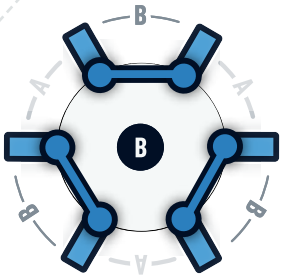
APPLICATIONS

- > Cell culture on chip
- > Drug screening
- > Toxicity tests
- > Stem cells assays
- > Organ on chip
- > SPR or TIR imaging coupled with microfluidics
- > Heat sink experiment

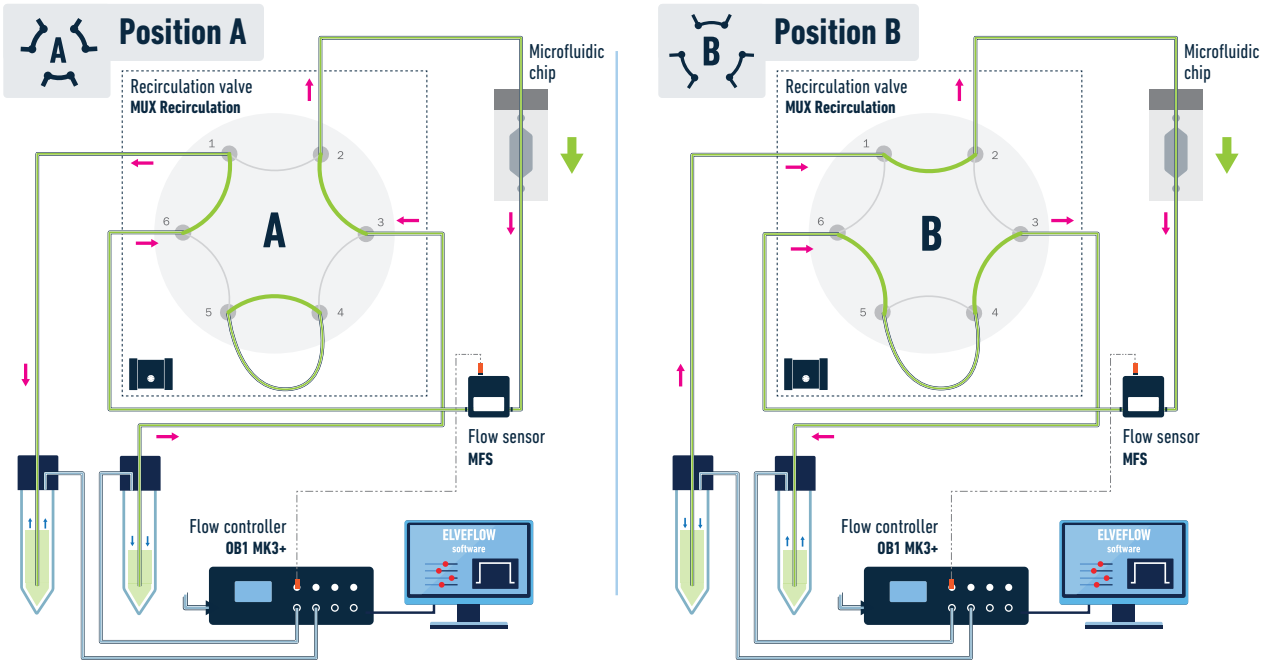
POSITION A



POSITION B



HOW IT WORKS



TECHNICAL SPECIFICATIONS

MUX RECIRCULATION		SPECIFICATIONS
Performances	Port to port switching time (ms)	180 ms
	Max. recommended pressure	7 bar
	Internal diameter	0.5 mm
Power supply	Input voltage range, AC	100 V to 240 V
	AC supply frequency	50 Hz to 60 Hz
	Max current consumption	2A peak
	Power consumption (max)	36 W
	Power supply voltage	18-24V DC
Mechanical specifications	Valve type	6 ports / 2 positions rotative valve
	Fluidic connector	Standard 1/4-28 UNF, flat-bottom
	Operating temperature	5 °C to 40 °C
	Operating humidity	20 to 70 % condensing
	Wetted materials	PCTFE and PTFE
	Dead volume(1)	None
Software	Computer specifications	USB 2.0 port, Intel Pentium II 500 MHz, 1 Go Hard Disk space, 2 Go RAM Windows XP and newer, 32/64 bit. LabVIEW® 2011 is required when using LabVIEW® libraries.
	Connection type	USB
	Provided elements	C++, Python, MATLAB® and LabVIEW® libraries

(1) Volume that is stuck in the system (dead end), which is not clearly swept and relies on diffusion to clear out

MUX RECIRCULATION DIMENSIONS without connectors (length x width x height): 133 x 156 x 133 mm

Non-contractual information, may be changed without notice.

MUX SERIES

FLOW SWITCH MATRICES

ELVEFLOW.COM/MICROFLUIDIC-FLOW-CONTROL-PRODUCTS/FLOW-CONTROL-SYSTEM/FLOW-MULTIPLEXER

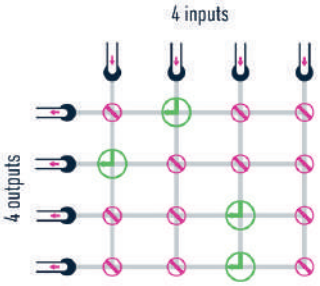
3 UNIQUE FLOW SWITCH MATRICES TO AUTOMATE FLOW HANDLING

- ✔ CONTROL UP TO 16 VALVES INDEPENDENTLY
- ✔ SMALL FOOTPRINT

MUX CROSS CHIP

Stop the flow in microfluidic devices

- > Rocker peek valves
- > Plug & play programmable flow stop
- > Complete equilibrium, stops flow in 100ms
- > Ultra low volume injection
- > Internal/external trigger
- > Fluidic connector: 10-32 UNF



APPLICATIONS: Instantaneous stop flow, small sample injection & sample premixing
WETTED MATERIAL: POM, Viton, PEEK, FKM

MUX FLOW SWITCH

Drug switch into microdevices

- > Rocker peek valves & PEEK manifold
- > Plug & play usb software
- > No samples cross-contamination & no backflow
- > Flexible: from 4 to 256 valves
- > Internal/external trigger
- > Fluidic connector: 1/4-28 UNF

APPLICATIONS: Drug, reagent & cell medium switch for cell biology and flow chemistry
WETTED MATERIAL: PEEK, FKM

MUX QUAKE VALVE

Open & close bilayer PDMS valves

- > Plug & play programmable valve sequence
- > Fast valve switch
- > Fine valve position tuning
- > Flexible: from 16 to 256 peek valves
- > Internal/external trigger
- > Fluidic connector: 10-32 UNF

APPLICATIONS: PDMS microvalves & micropumps and cell confinement device control
WETTED MATERIAL: POM, Viton, PEEK, FKM

TECHNICAL SPECIFICATIONS

MUX SERIES		CROSS CHIP	FLOW SWITCH MATRIX	QUAKE VALVE
Performances	Valves actuation time	20 ms		
	Max. supported pressure	2 bar (29 PSI)		
Power supply	Input voltage range, AC	100 V to 240 V		
	AC supply frequency	50 Hz to 60 Hz		
	Input current, AC	1 A		
	Power consumption	35 W		
	Safety	IEC/EN 61010-1: 2001		
	Shutting down power supply	disconnect AC/DC adapter		
Mechanical specifications	Valve type	2/2-way solenoid valve		3/2-way solenoid valve
	Input/output connectors	10-32 UNF	1/4-28 UNF	10-32 UNF
	Wetted materials	POM, Viton, PEEK, FKM	PEEK, FKM	POM, Viton, PEEK, FKM
	Operating temperature	10 °C to 40 °C		
	Operating humidity	20 to 80 %		
Software	Computer specifications	USB 2.0 port, Intel Pentium II 500 MHz, 1 Go Hard Disk space, 2 Go RAM Windows XP and newer, 32/64 bit. LabVIEW® 2011 is required when using LabVIEW® libraries.		
	Connection type	USB		
	Provided elements	C++, Python, MATLAB® and LabVIEW® libraries		

Non-contractual information, may be changed without notice.

MUX SERIES DIMENSIONS without connectors (length x width x height): 220 x 130 x 130 mm **TTL TRIGGER:** input/output 5 V

MUX WIRE

VALVES & VALVE CONTROLLER

ELVEFLOW.COM/MICROFLUIDIC-FLOW-CONTROL-PRODUCTS/FLOW-CONTROL-SYSTEM/MMW-MICROFLUIDIC-MUX-WIRE/

PLUG YOUR VALVES **ANYWHERE** IN YOUR MICROFLUIDIC SETUP

- ✓ MIX ALL KINDS OF VALVES
- ✓ PLUG FROM 1 TO 8 VALVES
- ✓ EASILY STACK THEM

LOW PRESSURE VALVE 2-WAY OR 3-WAY

2-WAY: Pick default setting: open or closed

- > Compatible with gas or liquid
- > ROCKER® valve technology (flow displacement < 10 nL)
- > Low internal volume: 20 µL & orifice diameter 1.4 mm
- > Wide pressure range: -0.75 bar to 2.5 bar (-11 psi to 37 psi)
- > High chemical resistance. Wetted materials: PEEK + FKM + PVDF and on-demand options: (PEEK or PFA) + (EPDM or FKM or Kalrez) + (PFA or PVDF)

HIGH PRESSURE VALVE 2-WAY OR 3-WAY

2-WAY: Pick default setting: open or closed

- > Compatible with gas or liquid
- > ROCKER® valve technology (flow displacement < 10 nL)
- > Low internal volume: 50 µL & orifice diameter: 1.6 mm
- > Wide pressure range: 0 bar to 4.5 bar (0 psi to 65 psi)
- > High chemical resistance. Wetted materials: PEEK + FKM + PVDF and on demand options: (PEEK or PFA) + (EPDM or FKM or Kalrez) + (PFA or PVDF)

CUSTOM MANIFOLD

On-demand design

- > We design on demand any fluidic manifold compatible with our valves to meet your requirements.
- > For instance, we can provide you with 4/1 valves with 20 ms closing time.

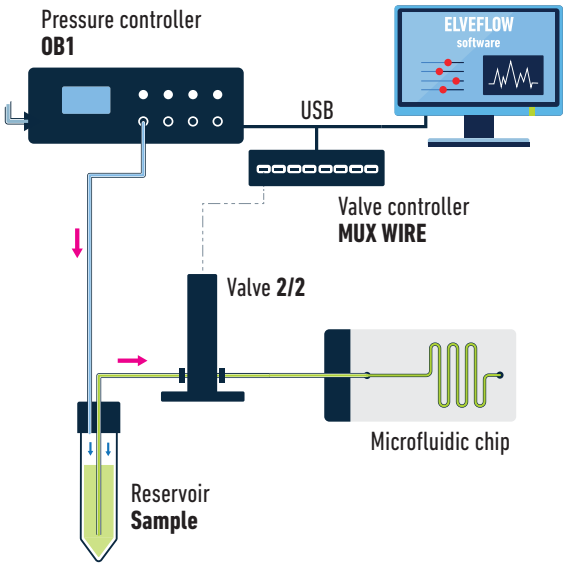
VALVE CONTROLLER

Easily control your microfluidic valves

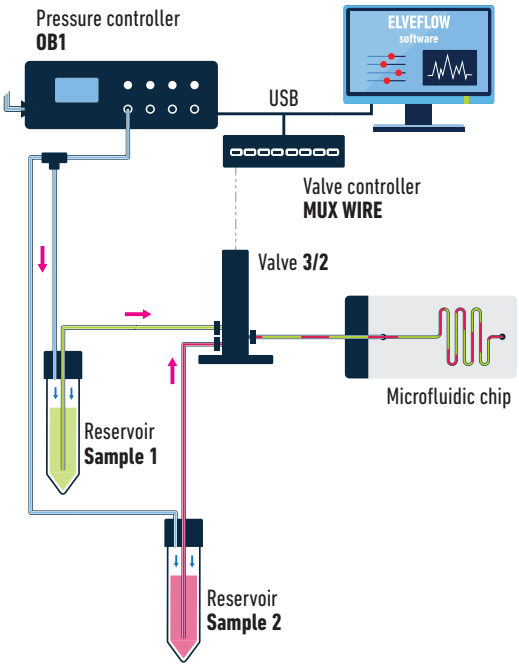
- > Fast liquid switching
- > Liquid sampling
- > Stop and go flows
- > Complex sequences of injection including flushing, rinsing, and sequential injection of several liquids

HOW IT WORKS

MICROFLUIDIC 2-WAY VALVE



MICROFLUIDIC 3-WAY VALVE



TECHNICAL SPECIFICATIONS

VALVES	VALVES DESIGN		
Low pressure valve -0.75 bar to 2.5 bar (-11 psi to 37 psi) With casing - Fittings: 1/4-28"	2-way Normally open	2-way Normally closed	3-way
High pressure valve 0 bar to 4.5 bar (0 psi to 65 psi) Without casing - Fittings: 10-32"	2-way Normally open	2-way Normally closed	3-way
Wetted materials (all valves)	PEEK + FKM + PVDF on demand options: (PEEK or PFA) + (EPDM or FKM or Kalrez) + (PFA or PVDF)		

Non-contractual information, may be changed without notice.

VALVE CONTROLLER	SPECIFICATIONS
Number of controlled valves	8
Bus interface	USB 2.0
Power supply	24 VDC, 1.5 A
Max total power (sum of the power of all connected valves)	35 W
Max valve power	10 W
Valve connectors	MICRO USB

Non-contractual information, may be changed without notice.

VALVE CONTROLLER DIMENSIONS without connectors (length x width x height): 128 x 81.5 x 31 mm **WEIGHT:** 251 g **TTL TRIGGER:** input/output 5 V

ELVEFLOW
PLUG & PLAY MICROFLUIDICS

PRODUCTS

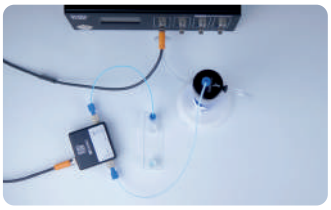
MEASUREMENT & DETECTION

MFS

THERMAL BASED FLOW SENSOR

ELVEFLOW.COM/MICROFLUIDIC-FLOW-CONTROL-PRODUCTS/MICROFLUIDIC-FLOW-CONTROL-MODULE/MICROFLUIDIC-LIQUID-MASS-FLOW-SENSORS/

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

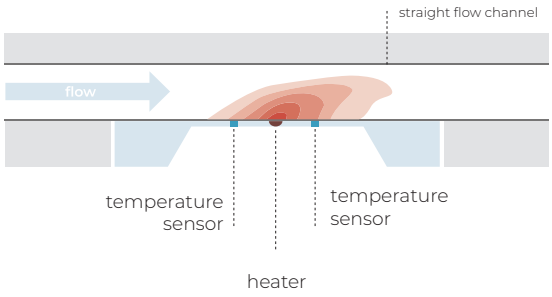
UNIQUE PERFORMANCES

- Calibrated flows **from 0.07 µL/min to 5,000 µL/min**
- Sensor response time: **40 ms**
- Resolution **down to 1.5 pL/s**
- Wetted materials: **glass or quartz**

APPLICATIONS

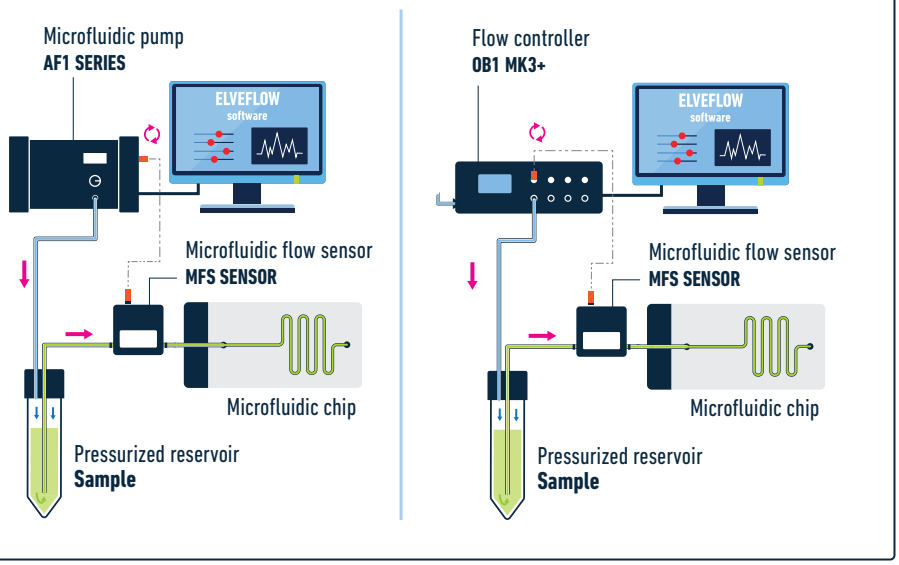
- Couple with an OB1 flow controller for direct flow rate control
- Bi-directional flow rate measurement (positive & negative)

PRINCIPLE

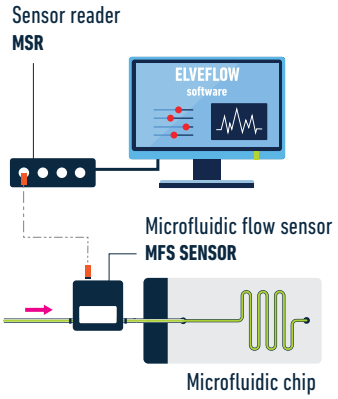


HOW IT WORKS

WITH ELVEFLOW FLOW CONTROLLERS: MONITORING + CONTROL

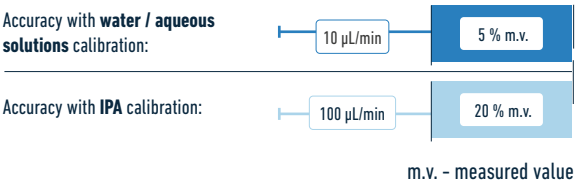


WITH SENSOR READER: MONITORING

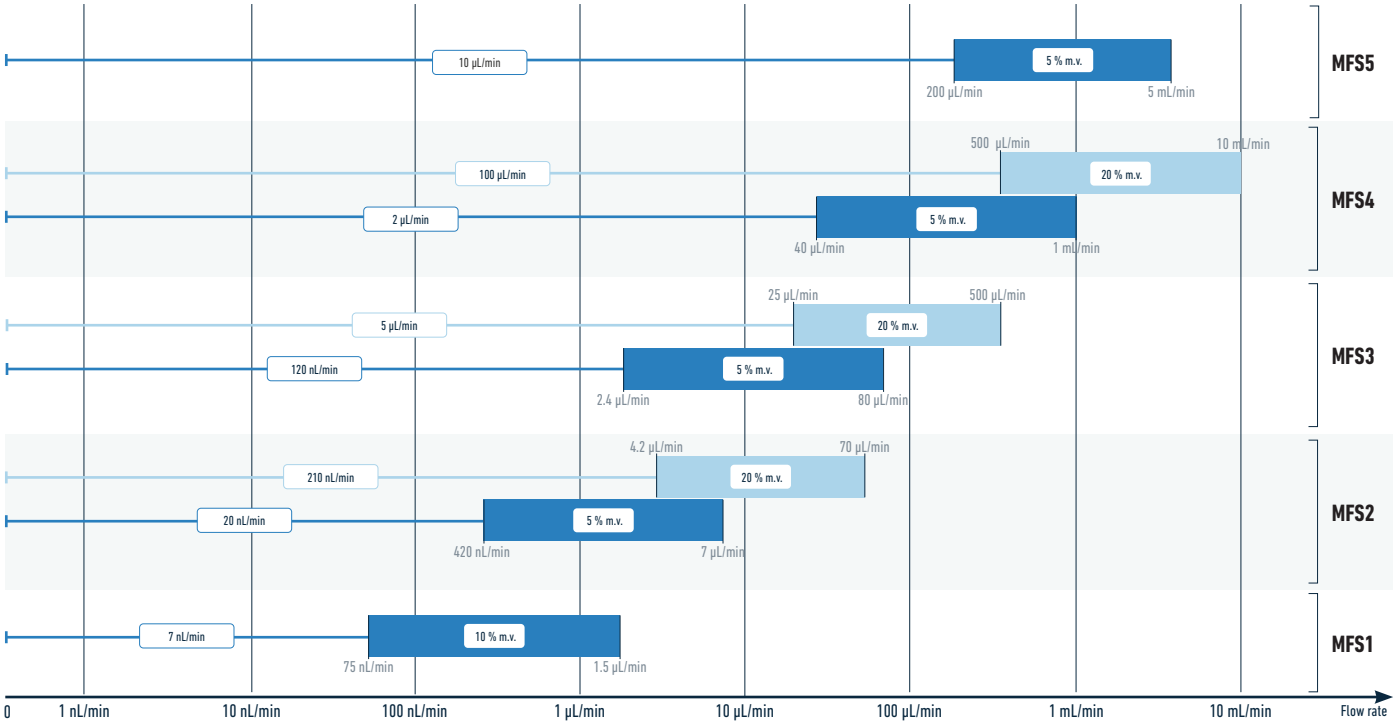


TECHNICAL SPECIFICATIONS

MFS FLOW RATE RANGES AND ACCURACY



m.v. - measured value



TECHNICAL SPECIFICATIONS

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

BFS

CORIOLIS BASED FLOW SENSOR

ELVEFLOW.COM/MICROFLUIDIC-FLOW-CONTROL-PRODUCTS/MICROFLUIDIC-FLOW-CONTROL-MODULE/MICROFLUIDIC-FLOW-SENSOR-CORIOLIS/

COMPATIBLE WITH ALL LIQUIDS: WATER, OIL, ALCOHOL, MIXTURE... WITH NO CALIBRATION REQUIRED

In partnership with **Bronkhorst**, we have developed a unique Coriolis flow sensor suited to microfluidics. It offers various benefits: **precision, wide range, straightforward compatibility with all liquids** (no calibration needed).

✓ COMPATIBLE WITH ALL LIQUIDS & GAS

✓ NO CALIBRATION NEEDED

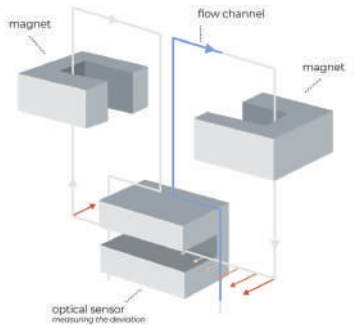
UNIQUE PERFORMANCES

- Large flow range **from 1.6 µL/min to 500 mL/min** (for water)
- Maximum flow rate: **500 mL/min** (for water)
- Sensor response time: **35 ms**
- Mass flow accuracy: **down to 2 %** of measured value (down to 0.2 % of mv on request)

APPLICATIONS

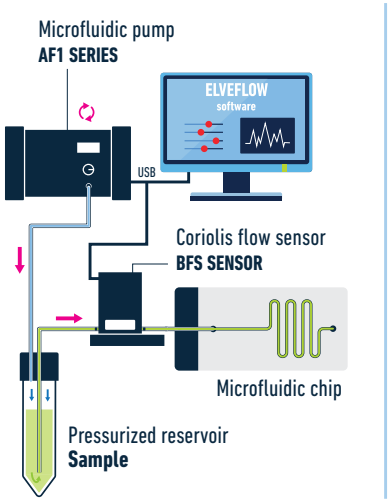
- Coumpound semiconductor processing
- Solar cell and FDP technology
- Food and pharmaceutical industries
- Medical microchemical or analytical installations
- Calibration laboratories

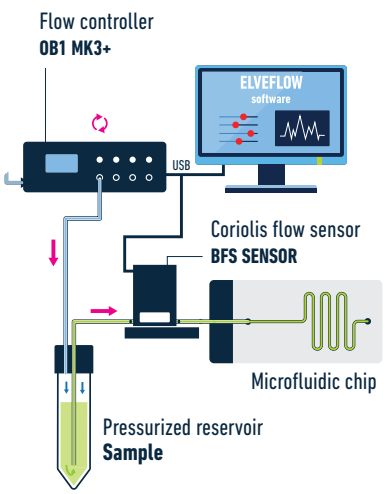
PRINCIPLE



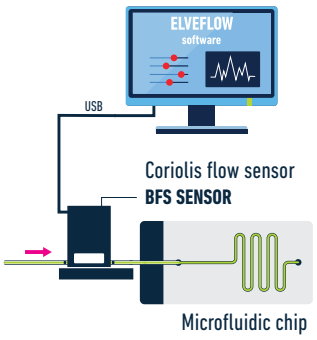
HOW IT WORKS

WITH ELVEFLOW FLOW CONTROLLERS: MONITORING + CONTROL





WITH EXTERNAL EQUIPMENT: MONITORING



TECHNICAL SPECIFICATIONS

CORIOLIS FLOW SENSOR	BFS 1	BFS 1+	BFS 2	BFS 3
Flow range	0.1 g/h to 200 g/h		1 g/h to 2000 g/h	30 g/h to 30000 g/h
Minimum flow rate (water)	1.6 µL/min		16.6 µL/min	500 µL/min
Maximum flow rate (water)	3.3 mL/min		33.3 mL/min	500 mL/min
PERFORMANCE				
Mass flow accuracy liquids	down to ± 2 % of measured value	down to ± 0.2 % of measured value		
Mass flow accuracy gases	up to ± 0.5 % o measured value			
Repeatability	± 0.05 % of rate ± 1/2 (ZS* x 100/flow) % based on digital output			
Zero stability (ZS) (1)	< ± 0.01 g/h		< ± 0.2 g/h	< ± 6 g/h
Density accuracy	< ± 5 kg/m³			
Temperature accuracy	± 0.5 °C			
Temperature effect (2)	Zero drift: ± 0.01 g/h/°C		Zero drift: ± 0.02 g/h/°C	Zero drift: ± 0.5 g/h/°C
Mounting (3)	Any position, attitude sensitivity negligible			
Device temperature	0...70 °C			
Response time (t 98 %)	0.2 s to fill the tubing then 35 ms			
MECHANICAL PARTS				
Wetted material	Stainless steel 316 L or comparable		Stainless steel 316 L or comparable	
			Optional: Hastelloy-C22	Optional: Hastelloy-C23
Pressure rating	200 bar		200 bar; higher on request	
Sensor inner diameter	250 µm		0.5 mm	1.3 mm
Microfluidic fitting type	1/4-28"		SwageLok	
Internal volume	13 µL		0.45 mL	0.82 mL
Calibration	/	Individual calibration certificate		

FLOW SENSOR SIZE (length x width x height): 65 x 32 x 144 mm **WEIGHT:** 3 kg

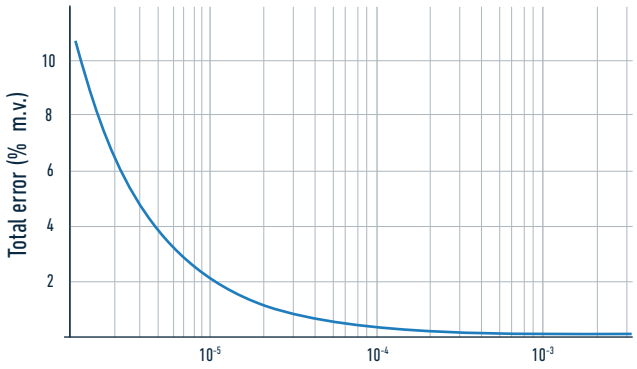
Non-contractual information, may be changed without notice.

(1) Guaranteed at constant temperature and for unchanging process and environment conditions. (2) Depends on flow rate, heat capacity fluid, T amb., T fluid and cooling capacity.
(3) To be rigidly bolted to a stiff and heavy mass or construction for guaranteed stability. External shocks or vibrations should be avoided.

TOTAL ERROR (% m.v.)

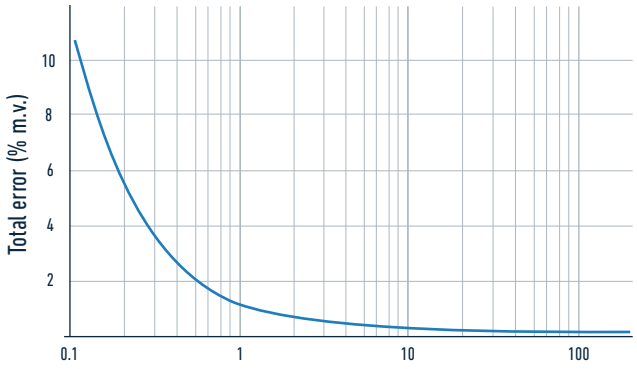
TOTAL ERROR = ACCURACY READING ± [(ZERO STABILITY / FLOW) X 100] [% READING]
m.v. - measured value

BFS 1+



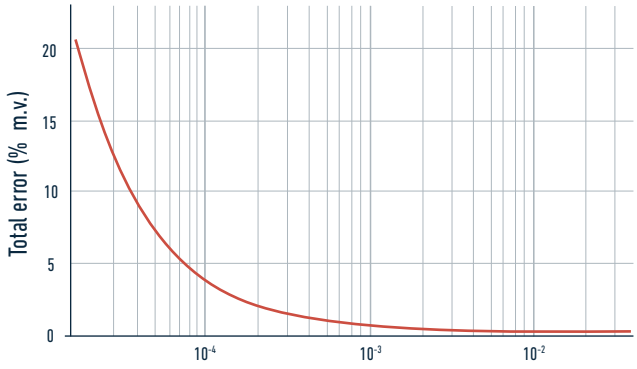
Volume flow rate (L/min) - log scale

water at 20 ° C



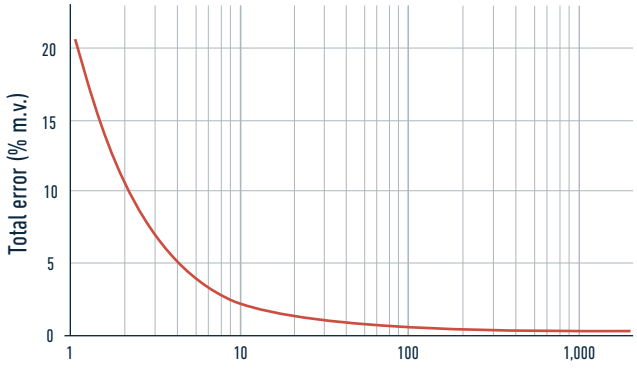
Mass flow rate (g/h) - log scale

BFS 2



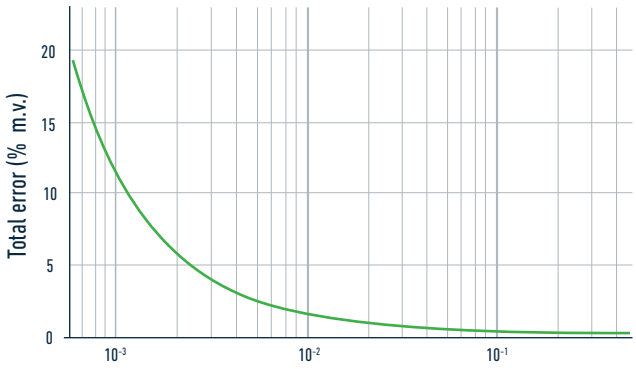
Volume flow rate (L/min) - log scale

water at 20 ° C



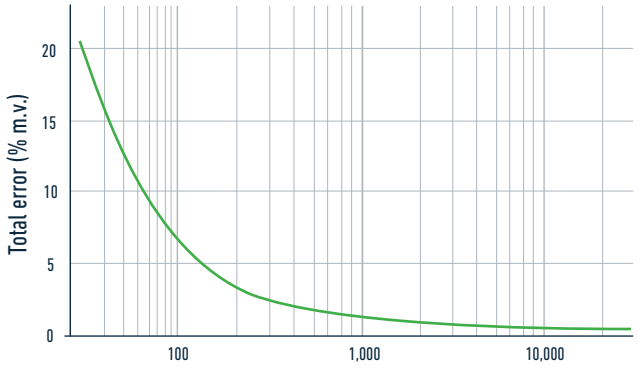
Mass flow rate (g/h) - log scale

BFS 3



Volume flow rate (L/min) - log scale

water at 20 ° C



Mass flow rate (g/h) - log scale

FLOW SENSORS COMPARISON MFS VS BFS

FLOW SENSORS COMPARISON	**BFS** (1 & 1+)	**MFS**
Accuracy	0.2 % of measured value [1]	5 % of measured value
Range	One sensor for 1.6 µL/min to 3 mL/min	Five sensors from 10 nL/min to 5 mL/min
Negative flow measurement	Yes	Yes
Supported fluid types	All without calibration	All with calibration
Response time	35 ms [2]	From 1 to 70 ms [3]
Flow sensor size	65 x 32 x 144 mm	58 x 53 x 23 mm
Internal diameter	250 µm	From 25 µm to 1.8 mm [4]
Weight	3 kg	100 g
Connectors	1/16" OD tubing	1/16" OD tubing
Internal volume	13 µL	From 1 µL to 80 µL[4]
Wetted material	Stainless steel 316L or comparable	Glass or Quartz
Principle	Coriolis	Thermal
Computer connection	Directly via USB to the computer	Directly on the OB1 and the AF1 or with the Sensor reader MSR
Additional features	Temperature and density measurement	

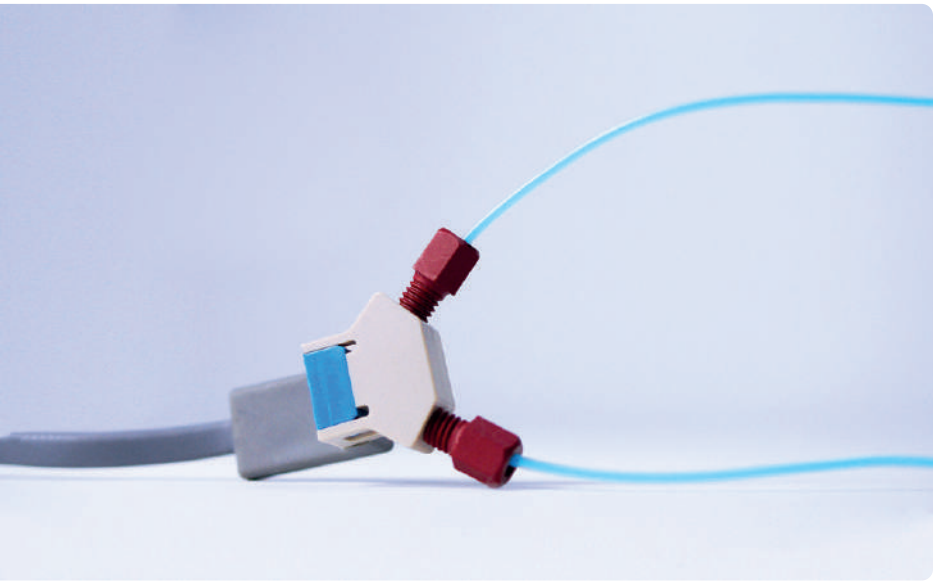
Non-contractual information, may be changed without notice.

(1) Available upon request. 2 % accuracy for the regular model
(2) 0.2 s at 98 % (spec) to fill the tubing then 35 ms with temperature measurement
(3) Depending on chosen digital resolution
(4) Depending of the sensor range

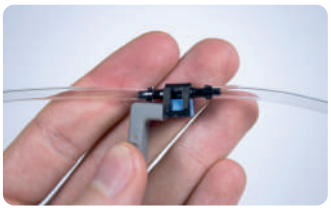
MPS

LOW VOLUME PRESSURE SENSOR

ELVEFLOW.COM/MICROFLUIDIC-FLOW-CONTROL-PRODUCTS/MICROFLUIDIC-FLOW-CONTROL-MODULE/MICROFLUIDIC-LIQUID-FLOW-THROUGH-PRESSURE-SENSOR/



MEASURE AND CONTROL PRESSURE ANYWHERE IN YOUR SETUP



High accuracy pressure sensor adapted to liquid and gas and compatible with 3/32" ID tubing or 10-32 fittings for 1/16" OD tubing. Monitor **low pressure flow rate** in your microfluidic setup.

✔ **PRESSURE FEEDBACK OPTION**

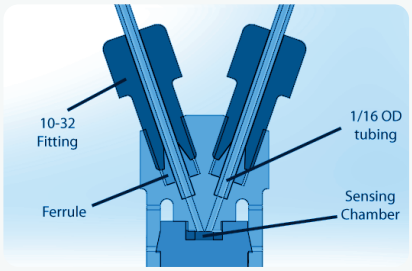
✔ **MEASUREMENT & DETECTION**

UNIQUE PERFORMANCES

> Accuracy **down to 0.2 % FS**
> 5 ranges **from 70 mbar to 7,000 mbar**
> Internal volume: **7 µL**
> Settling time: **20 ms**
> Works with both **liquid & gas**

APPLICATIONS

> You can plug our pressure sensor anywhere within your microfluidic setup, record the pressure on your computer and adjust it accordingly using our pressure pumps.



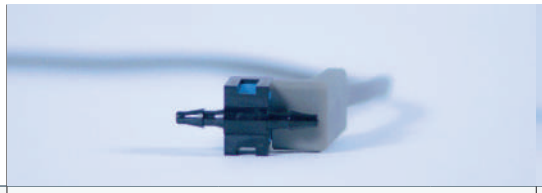
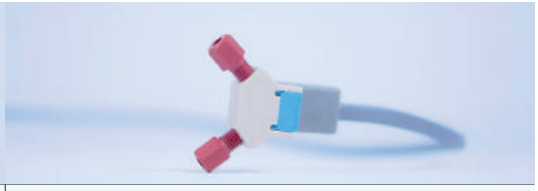
OUR PRESSURE SENSORS WORK AS GAUGE PRESSURE SENSORS,

measuring positive and negative pressure relatively to atmospheric pressure.

TECHNICAL SPECIFICATIONS

MICROFLUIDIC PRESSURE SENSOR		MPS 0	MPS 1	MPS 2	MPS 3	MPS 4
Sensor range		**70 mbar** 1 psi	**340 mbar** 5 psi	**1 bar** 15 psi	**2 bar** 30 psi	**7 bar** 100 psi
Pressure range min-max		-1 to 1 psi	-5 to 5 psi	-15 to 15 psi	-15 to 30 psi	-15 to 100 psi
Maximum overpressure		20 psi	20 psi	45 psi	60 psi	200 psi
Pressure accuracy liquids		up to ± 0.5 % of max range	up to ± 2 % of max range	up to ± 0.2 % of max range		
Linearity %span	Typical	**0.25**	**0.4**	**0.25**	**0.1**	**0.4**
	Max.	**0.5**	**0.5**	**0.5**	**0.2**	**0.6**
Repeatability & hysteresis %span		± 3.0	± 0.4	± 0.2		
Operating temperature		-40 °C to +85 °C				
Specified temperature range		0 °C to +50 °C				

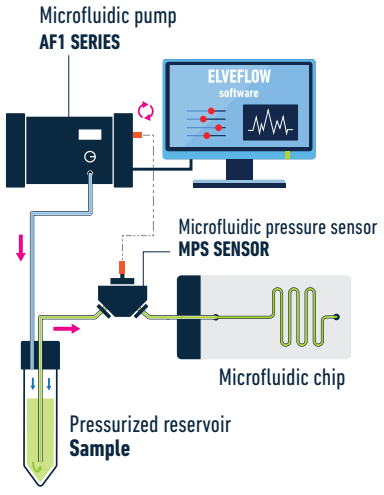
Non-contractual information, may be changed without notice.

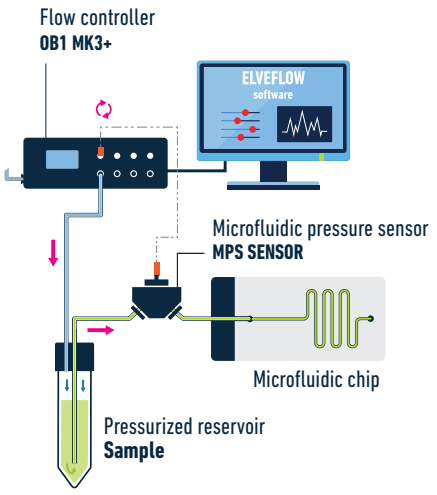
PACKAGE MODEL	LARGE	SMALL
Sensor design		
Connection type	3/32 barb	10-32 thread with ferrule
Internal volume	70 µL	7.5 µL
Recommended tubing diameter (inch)	3/32" ID	1/16" OD
Wetted materials	polyetherimide, silicon and fluorosilicone seal	PEEK, silicon and fluorosilicone seal
Electrical connection	4 point measurement M8 connector compatible with Elveflow Sensor Reader and a Sensor Reader	

Non-contractual information, may be changed without notice.

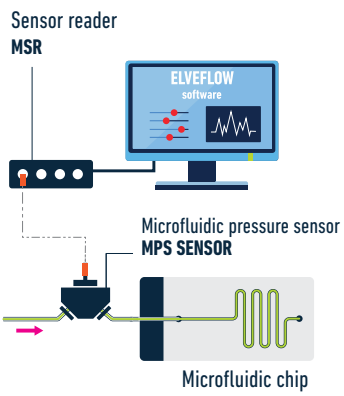
SENSOR SIZE (length x width x height): **LARGE**: 29 x 13 x 27 mm **SMALL**: 40 x 33 x 19 mm **AMPLIFICATION MODULE SIZE:** 52 x 24 x 24 mm

WITH ELVEFLOW PRESSURE CONTROLLERS: MONITORING + CONTROL





WITH SENSOR READER: MONITORING



MFP

LUER-LOCK PRESSURE SENSOR

ELVEFLOW.COM/MICROFLUIDIC-FLOW-CONTROL-PRODUCTS/MICROFLUIDIC-FLOW-CONTROL-MODULE/MFP-MICROFLUIDIC-INLINE-PRESSURE-SENSOR/

MEASURE AND CONTROL PRESSURE OVER A LARGE RANGE

Flow-through pressure sensors adapted to gases or liquids, and compatible with the Luer-lock standard. The flowplus fluid sensor is intended to **measure the pressure** of fluid media flowing through the sensor.

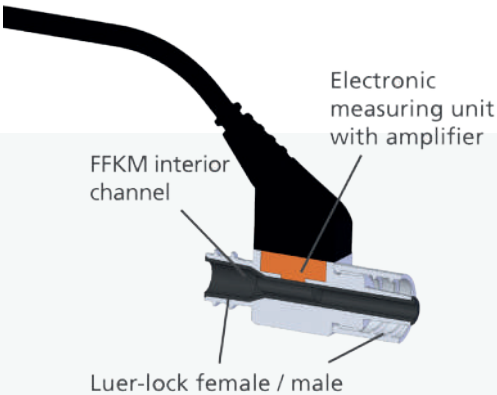
- ✔ **HIGH CHEMICAL COMPATIBILITY**
- ✔ **UP TO 16 BAR**

UNIQUE PERFORMANCES

- > Accuracy **up to 2 % FS**
- > 1 ranges **0 - 16 bar** - Overlay 25 bar
- > **No dead volume**
- > Flow rate **up to 100 mL/min**
- > Versatile: works with **gas & liquid**

APPLICATIONS

> You can plug our pressure sensor anywhere within your microfluidic setup, record the pressure on your computer and adjust the pressure or flow accordingly using our pressure pumps.



WIDE MEDIA COMPATIBILITY

(material in contact: FFKM) FDA-certified and therefore, suitable for food industry use.

TECHNICAL SPECIFICATIONS

LUER-LOCK PRESSURE SENSOR	SPECIFICATIONS
Maximum flowrate (1)	**100 mL/min**
Pressure range	0 to 16 bar
Power supply	12 to 30 VDC
Wetted materials	housing: coated aluminum interior flow channel: FFKM, molding TPU
Output signal	0.1 to 10 V
Electrical connection	"push-pull" connector / M8 sensor plug
Mechanical connection	LUER-LOCK DIN EN 1707
Temperature range	15 to 45 °C
Internal volume	205 µL
Dimensions	inner diameter: between **4 mm** and **1.8 mm** length: **31.2 mm**

(1) Depends on the viscosity and primary pressure of the medium

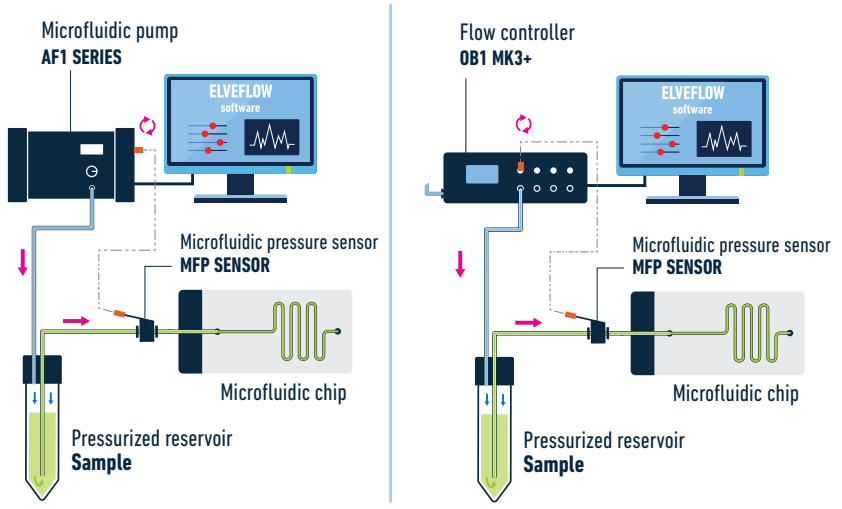
Non-contractual information, may be changed without notice.

SENSOR SIZE (length): 31.2 mm

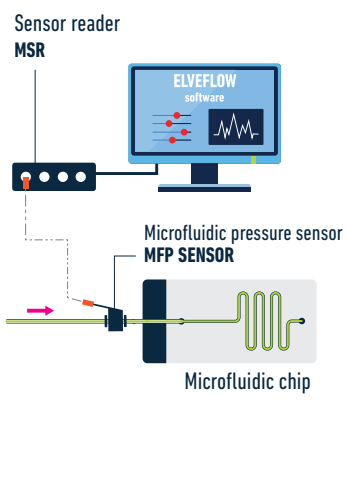
OUR PRESSURE SENSORS WORK AS GAUGE PRESSURE SENSORS,

measuring pressure relatively to atmospheric pressure.

WITH ELVEFLOW FLOW CONTROLLERS: MONITORING + CONTROL



WITH SENSOR READER: MONITORING



MBD

MICROFLUIDIC BUBBLE DETECTOR

ELVEFLOW.COM/MICROFLUIDIC-FLOW-CONTROL-PRODUCTS/MICROFLUIDIC-FLOW-CONTROL-MODULE/MICROFLUIDIC-LIQUID-SENSOR/

CHECK IF LIQUID IS PRESENT IN CLEAR TUBING

The sensor is able to **detect the presence of fluids inside clear tubing**, **trigger a signal to another instrument** and act accordingly - such as stop, wait a certain amount of time, allow enough flow to clear the tubing, or reset the sensor.

- ✔ **BUBBLE MONITORING**
- ✔ **LIQUID INTERFACES DETECTION**

UNIQUE PERFORMANCES

- > Cost-effective compared to camera
- > Based on true/false logic
- > Reliable non invasive technique
- > Prevents damage in cells with bubble bursts
- > The microfluidic bubble detector comes in two different casings suited to the use with 1/16" or 1/4" outside diameter tubes

APPLICATIONS

- > Bubble detection
- > Liquid level sensing
- > Blood processing equipment
- > Patient connected medical devices
- > Perform bilateral recirculation based on air detection

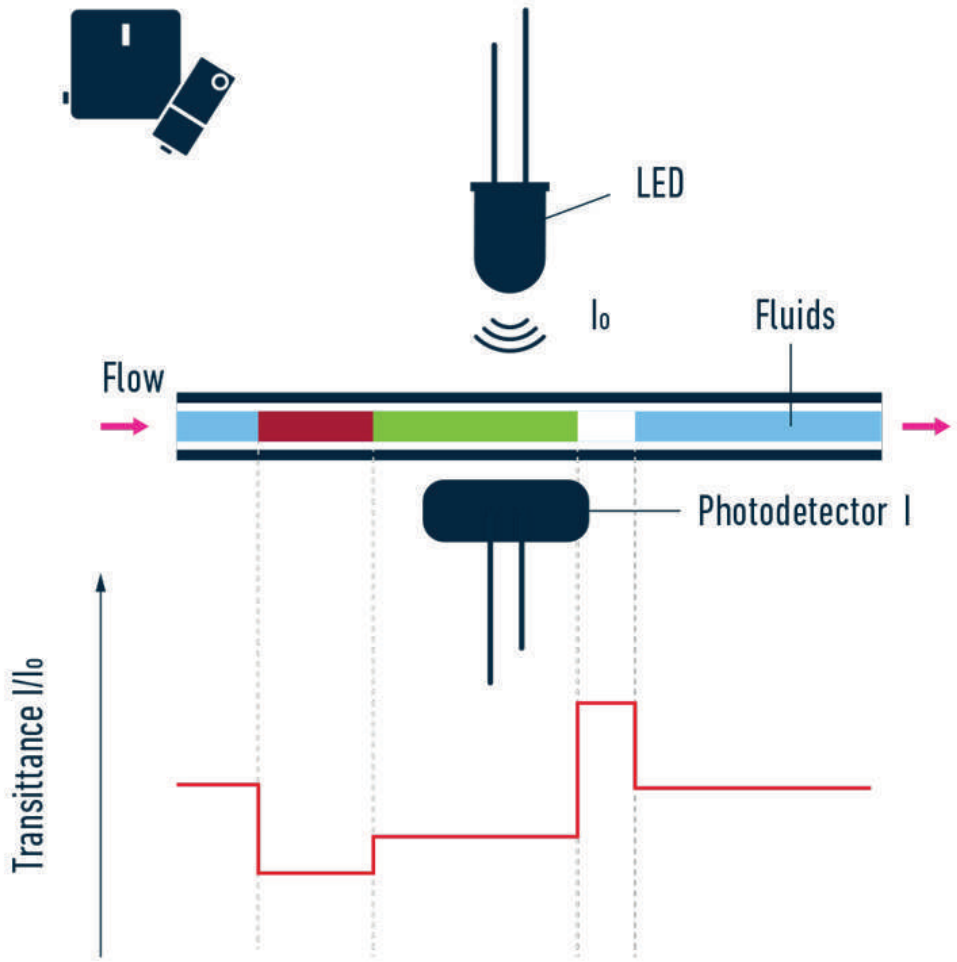
TECHNICAL SPECIFICATIONS

DETECTION MODULE SIZE (length x width x height): 68 x 29 x 33 mm **AMPLIFICATION MODULE SIZE:** 69 x 59 x 22 mm

HOW IT WORKS

A light beam is emitted by a LED at known power. This light beam goes through the capillary and the fluid passing through. It is then collected by an NPN silicon phototransistor. This phototransistor converts the light power into an electrical power. When a fluid changes, the optical index and the light absorption coefficient change accordingly. It induces a change in the electrical power and allows to detect changes in the fluid.

WAVELENGTH = 890 nm



MSR

SENSOR READING UNIT

ELVEFLOW.COM/MICROFLUIDIC-FLOW-CONTROL-PRODUCTS/MICROFLUIDIC-FLOW-CONTROL-MODULE/MSR-MICROFLUIDIC-SENSOR-READER-V2/

AN ACQUISITION **INTERFACE** FOR ALL SENSORS

The sensor reader is an interface allowing the **acquisition** of many kinds of **analog & digital sensors**, including Elveflow pressure sensors and flow sensors.

✔ **MONITOR UP TO 4 SENSORS**

✔ **REAL-TIME CONTROL & FEEDBACK**

UNIQUE PERFORMANCES

> Fast acquisition frequency **1 kHz**
> From **9 to 16 bits resolution**
> Real-time control & **feedback loops**
> Read simultaneously **up to 4 sensors**

APPLICATIONS

> The Sensor Reader can be used to monitor flow rate, pressure, or other physical parameters on any type of flow control instrument (syringe pump, peristaltic pump, perfusion, pressure controller)
> It embeds two independent power supplies which allows the use of a wide variety of sensors simultaneousy, functionning with different voltages for their power supply

TECHNICAL SPECIFICATIONS

SENSOR READER UNIT	SPECIFICATIONS		
Number of sensors	4		
Sensor connectors	M8 female (4 pins)		
USB reading current min - max	100 mA - 500 mA		
Sensor power supplies voltage (2 power supplies tunable independently each of which feeding 2 sensors)	5 - 25 V		
Total power on the 4 channels	0.9 W		
SENSOR INPUTS			
Impedance	1 MΩ		
Acquisition frequency	1 Khz		
Acquisition resolution	from 9 to 16 bits		
Input range	0 - 10 V	0 - 5 V	0 - 1 V
Resolution (1 bit)	5 mV	2.5 mV	0.5 mV
Noise (full band)	5 mV rms	2.5 mV rms	0.5 mV rms
ANALOG LOW-PASS FILTER FUNCTION CHARACTERISTICS			
Cutoff frequency	60 Hz		
Filter order	3		

SENSOR READER SIZE without connectors (length x width x height): 91 x 69 x 29 mm **WEIGHT:** 320 g

Non-contractual information, may be changed without notice.

ESI

ELVEFLOW SOFTWARE

ELVEFLOW.COM/MICROFLUIDIC-FLOW-CONTROL-PRODUCTS/FLOW-CONTROL-SYSTEM/ELVEFLOW-SOFTWARE/

ESI – ELVEFLOW SMART INTERFACE
A UNIQUE SOFTWARE FOR ALL INSTRUMENTS

- ✔ DIRECTLY INPUT FLOW RATE
- ✔ CUSTOM FLOW PROFILE
- ✔ ADVANCED WORKFLOW AUTOMATION

The **Elveflow Smart Interface** allows an intuitive control of our microfluidic instruments in a few clicks. It is designed both for basic control and **complex tasks** thanks to the use of the scheduler.

The ESI microfluidic software makes many applications easy, such as: **generation of continuous fluid streams, dosing of volumes, generation of dynamic flow profiles, Optomicrofluidic control**, and many more...

NATIONAL INSTRUMENTS™

National Instrument is our technological partner for embedded electronics

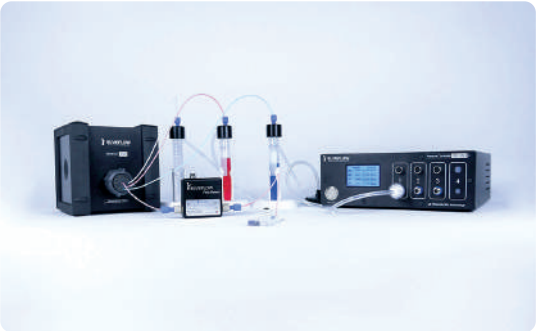
FEATURES THAT MATTER

- > Pressure & flow rate **visualization** and **recording**
- > **Programming** & **automation** of complex sequences
- > Easy alternative instrument control through the provided **C++, Python, MATLAB®** and **LabVIEW® libraries**

APPLICATION PACKS

ELVEFLOW PACKS

ELVEFLOW.COM/MICROFLUIDIC-FLOW-CONTROL-PRODUCTS/MICROFLUIDIC-APPLICATION-PACKS/



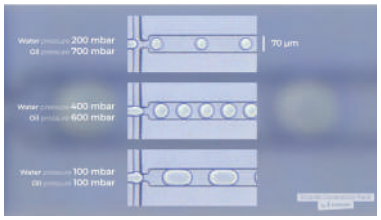
ELVEFLOW APPLICATION PACKS

Our Applications Packs are **all-in-one solutions** which include everything you need to perform your microfluidic experiments successfully. Our **many configurations available** ensure that you get a microfluidic setup perfectly fitted to your needs.

https://www.elveflow.com/microfluidic-products/microfluidics-application-packs/

DROPLET GENERATION PACK

Flow control and chip for droplet generation straight out of the box

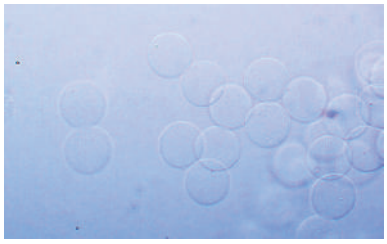


Elveflow's Easy Droplet Generation Pack contains all the required parts for researchers' needs to start making droplets and emulsions out of the box. It brings the many benefits of microfluidics, such as excellent **monodispersity**, **reproducibility** and **scalability** to your daily work in order to achieve great science.

https://www.elveflow.com/microfluidic-products/microfluidics-application-packs/easy-droplet-generation/

ALGINATE BEADS GENERATION PACK

All you need to know to perform monodisperse hydrogel particle production (PDI < 5 %)

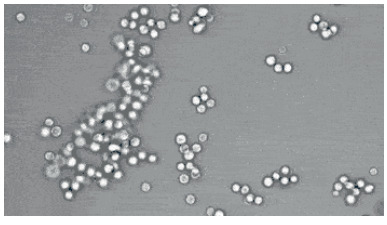


Elveflow's Alginate Beads Generation Pack contains one pumping channel to flow the aqueous alginate phase and another pumping channel to push the continuous oil phase through our droplet generation chip, enabling the generation of **alginate droplets in oil.** The droplet size is determined by the chip channel size and the flow rate ratio of both phases. Flow rates can be measured thanks to our multiple flow rate sensors (MFS or BFS series).

https://www.elveflow.com/microfluidic-products/microfluidics-application-packs/easy-microfluidic-alginate-beads-generation-pack/

CELL & BIOLOGY PACK

Liquid handling for cell-based experimentations

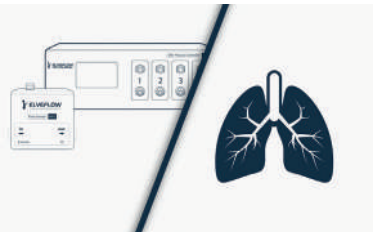


The Cell & Biology Pack includes all the necessary elements to create a **continuous flow** and monitor flow rate applied on the cells. Ideal for experiments requiring switches between different cell culture mediums. A computer-controlled valve allows sequential injections (up to 10 different solutions, more on demand).

https://www.elveflow.com/microfluidic-products/microfluidics-application-packs/perfusion-for-cells-and-biology/

ORGAN-ON-A-CHIP PACK

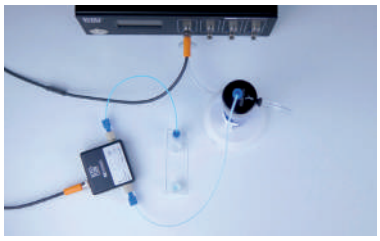
Flow control and chip solution for organ-on-chip experiments



A full microfluidic system for Organ-On-Chip experiments. This fully integrated solution contains all the required microfluidic parts for researchers to reproduce numerous characteristics of the in vivo environment of cells and tissues.
https://www.elveflow.com/microfluidic-products/microfluidics-application-packs/organ-on-a-chip-pack/

MICROFLUIDIC STARTER PACK

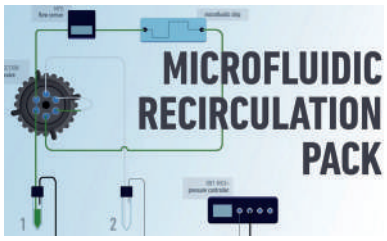
All-in-one solution to discover microfluidics



Elveflow's **Starter Pack** contains all necessary elements for you to start your own microfluidic experiments. This **easy-to-use system** covers the majority of microfluidics researchers' needs. It is fully compatible with the whole Elveflow product range, enabling you to upgrade your system as your needs grow.
https://www.elveflow.com/microfluidic-products/microfluidics-application-packs/starter-pack/

MICROFLUIDIC RECIRCULATION PACK

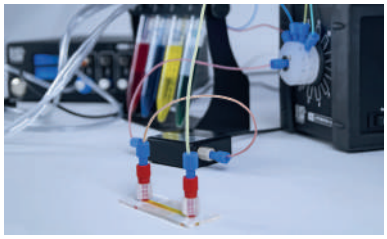
Full system for continuous unidirectional recirculation experiments



Elveflow's **Recirculation Pack** is a complete system which enables automatic re-use and unidirectional recirculation of liquids in microfluidic experiments. It brings the many benefits of our technology, such as **pulseless smooth flow, reproducibility, accurate and precise flow rate control.** It enables full automation of week-long experiments with limited media volumes or more advanced applications such as the modeling of complex biological flow patterns.
https://www.elveflow.com/microfluidic-products/microfluidics-application-packs/one-way-recirculation/

SEQUENTIAL FLUID INJECTION PACK

Quickly switch between up to 10 fluids at a controlled flow rate



Elveflow's sequential fluid injection pack is dedicated to any system that requires to **quickly swap between several solutions while maintaining a precise flow rate**. This makes it a perfect fit for **biosensors, biochemical sensors or electrochemical sensors test rigs, flow chemistry, Seq-Fish, drug testing applications, and many more...**
https://www.elveflow.com/microfluidic-products/microfluidics-application-packs/sequential-fluid-injection-pack/

ACCESSORIES

ELVEFLOW ACCESSORIES

ELVEFLOW.COM/MICROFLUIDIC-PRODUCTS/MICROFLUIDICS-ACCESSORIES/

To order **Elveflow Accessories**, you can contact us directly for any quote or tech support request, or to place a purchase order, because the **Elveflow accessories team is always ready to make your experience with us a pleasure**. Alternatively, you can browse the Elveflow Accessories product line on Darwin Microfluidics and order online. Darwin Microfluidics is our new **online reseller**, so go check it out!

MICROFLUIDIC ACCESSORIES

MICROFLUIDIC RESERVOIRS
BUBBLE REMOVER
RESERVOIR XXS ON CHIP
4 TUBES HOLDER
PRESSURIZED AIR SOURCE
VACUUM GENERATOR
KIT FITTINGS STARTER PACK LUER
KIT FITTINGS STARTER PACK PUSH IN
MANIFOLD 9 PORTS
PTFE TUBING 1/16" OD X 1/32" ID, 50M
REMOTE FLOW CONTROL

PRESSURE AND VACUUM GENERATORS

AIR COMPRESSOR

PRESSURIZED AIR SOURCE

Clean pressurized air, very low level of noise: the perfect pressure source

https://www.elveflow.com/microfluidic-products/microfluidics-accessories/air-pressure-generator/

VACUUM PUMP

VACUUM GENERATOR

Oil free, low noise, high efficiency and long lifespan vacuum pump

https://www.elveflow.com/microfluidic-products/microfluidics-accessories/vacuum-generator/

RESERVOIRS TECHNICAL SPECIFICATIONS

RESERVOIRS	Volume	2 ports	4 ports
XXS	800 µL	NA	NA
XS	1.5 - 2 mL	available	not available
S	15 mL	available	available
M	50 mL	available	available
L	100 mL	available	available
HP	150 mL	available	not available

Non-contractual information, may be changed without notice.

RESERVOIRS SPECIFICATIONS DEDICATED TO THE OB1 PRESSURE CONTROLLER

PRESSURIZED TANK VERSION	OB1 PRESSURE CHANNEL RANGES				
	0 to 200 mbar (0 to 2.9 psi)	0 to 2,000 mbar (0 to 29 psi)	0 to 8,000 mbar (0 to 116 psi)	-900 to 1,000 mbar (-13 to 14.5 psi)	-900 to 6,000 mbar (-13 to 87 psi)
XXS	✓	*	*	*	*
XS	✓	✓	✓	✓	✓
S	✓	✓	✓	✓	✓
M	✓	✓	✓	✓	✓
L	✓	✓	**	✓	**
HP	✓	✓	✓	✓	✓

*not tested in these conditions

** The reservoir passed the pressure resistance tests in these conditions; nevertheless, Elveflow doesn't recommend using it as they are sensitive to mechanical damage

PLUG & PLAY MICROFLUIDICS

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ART DIRECTOR JULIEN RIDOUARD

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