

# OB1 *Mk3*

## Pressure & Vacuum Controller

20 X more stable & up to 10 X faster  
than other microfluidic flow controllers

Stability: 0.005 % - Response Time: 9 ms



### Pressure & vacuum within the same channel.

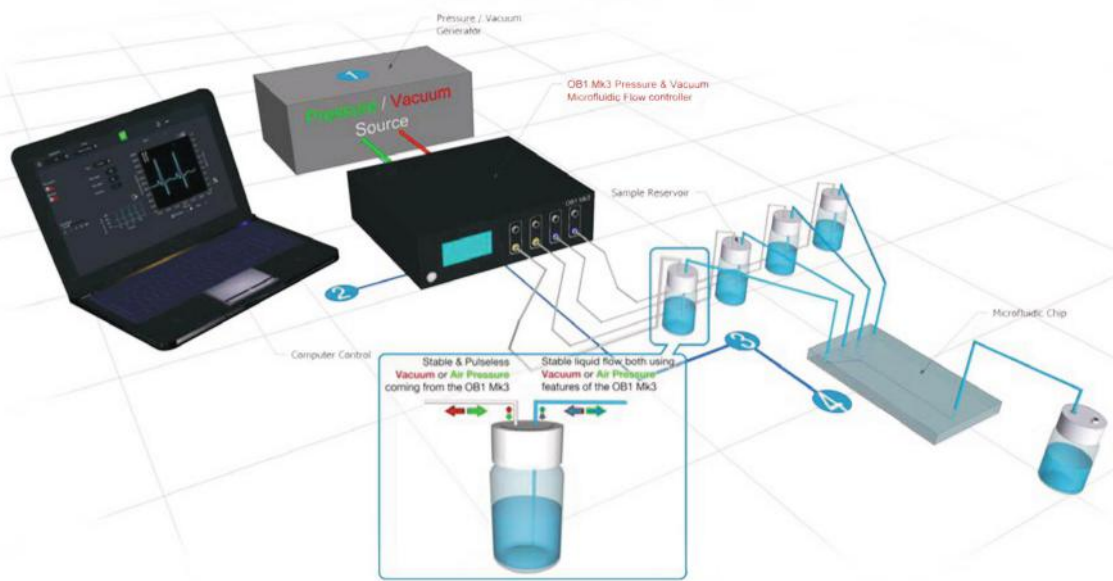
#### Outstanding performances

- › Pressure stability: 0.005 %
- › Pressure Sensor Resolution 0.006 %
- › Response time: 9 ms
- › Settling time: 40 ms

#### Wide range of applications

- › Digital microfluidics: micro-droplets, anisotropic particles, double emulsion generation & handling
- › Bead and particle manipulation
- › Fast liquid sample switching
- › Cell culture experiments

# OB1 PRINCIPLE



## 1 Pressure & Vacuum Source

Connect a pressure and a vacuum source to your OB1.

## 2 Monitoring

Control the pressure and flow rate\* using the Elveflow Smart Interface on your computer. This software enables you to create and automate sequences with a specific pressure or flow rate profile.

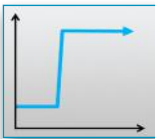
## 3 Sample

Depending on your choice, the liquids can be **sucked into** the reservoir or be **ejected** therefrom since the OB1 can use **Pressure** or **Vacuum** within the same fluidic channel.

## 4 Chip

OB1 Pressure & Vacuum features offers precise sample handling, and provides full control over the sample injection.

# OB1 FEATURES & BENEFITS



### › Short Response & Settling Time Responsive performance.

The piezo technology used on the OB1 Mk3 enable a blazing fast flow change in your microdevice and make the OB1 the flow controller of choice for the most demanding microfluidic applications.

### › Highest Flow Stability Taking control to a new level.

The 0.005 % flow stability ensures a superior flow performance even at low flow rates, to provide you with low noise data and quality results upon first time.

### › Accurate Flow Rate Control Master the Flow.

Our flow regulation algorithm provides a real time regulation of the flow rate inside your microchannels while keeping the stability and responsiveness of pressure driven flows.



### › Plug & Play Software Interface Shorten the Path to Your Goal.

ESI - Elveflow Smart Interface - controls all Elveflow instruments, letting you automate basic functions to operate all your devices with the same intuitive interface. Seldom used expert functions are out of sight, but just a mouse click away. Save time and get faster answers to your questions!

### › Complex Fluidic Profiles Make the Complex Simple.

Our profile editor will enable you to easily create and program sine, triangle, square, sawtooth and pulses flow profiles to automate the most sophisticated protocols.



### › High Customization Flexibility Your Flexible Choice of Elements.

The OB1 offers a range of technical features and product versions that enable you to design your OB1 instrument the way you prefer. Get from 1 up to 4 channels, in any maximum pressure range (200 mbar, 2 bar, 8 bar or vacuum) with any type of flow sensor, on the same instrument.

### › Setup Synchronization Communication Skills.

The OB1 offers a TTL trigger set for easily synchronizing your instrument with any Elveflow device, microscope or mechanical shutter. Get a complete control of all the devices involved in your experiments.

### › High Compliance Ever ready.

Former electro-mechanical pressure controllers have limited gas throughput which limits their ability to quickly pressurize large tanks. The OB1 MkII technology enables fast pressurization of tanks up to 1 liter and enables you to setup long term or high flow rate microfluidic experiments.

## The Elveflow® Smart Interface Makes Your Work Easier

Thanks to an ergonomic design of the fluidic functions & modules, your routine tasks and workflows will be more comfortable.

- ▶ Intuitive control interface
- ▶ Real time control using pressure or flow rate regulation
- ▶ Pressure & flow rate visualization and recording
- ▶ Programming & automation of complex sequences
- ▶ Easy alternative instrument control through the provided Labview® and Matlab® libraries, and DLLs



National Instruments is our technological partner for embedded electronics



# OB1 TECHNICAL SPECIFICATIONS

Unit Pressure Range	0-200 mbar (0-2.9 psi)	0-2000 mbar (0-29 psi)	0-8000 mbar (0-116 psi)	-900 to 1000 mbar (-14.5 psi to 14.5 psi)
Pressure Stability <sup>(1)</sup>	0.005 % FS 10 µbar - 0.00014 psi	0.005 % FS 100 µbar - 0.0014 psi	0.006 % FS 500 µbar - 0.007 psi	0.05% FS (-900 to 500 mBar : 1 mBar - 0.014 psi) 0.25% FS (500 to 1000 mBar: 5 mBar - 0.072 psi)
Response Time	down to 9 ms <sup>(2)</sup>			
Settling Time	down to 40 ms <sup>(2)</sup>			
Pressure Sensor Resolution	0.006 % FS 12.2 µbar - 0.00017 psi	0.006 % FS 122 µbar - 0.0017 psi	0.006 % FS 0.48 mbar - 0.007 psi	0.006 % FS 122 µbar - 0.0017 psi
Input Pressure (min - max)	1.5 bar - 10 bar		Any value from 0 to -1 bar <sup>(3)</sup> .	
Liquid Compatibility	No liquid should enter the OB1. Any aqueous or organic solvent, oil or biological sample solution can be propelled.			
Pressure Source	Non corrosive, non explosive, dry and oil-free gases, e.g. air, argon, N <sub>2</sub> , CO <sub>2</sub> ,...			

# OB1 PRODUCTS & SERVICES

Elements provided by Elveflow	Included	Optional
<b>Software &amp; libraries</b> Control all Elveflow® instruments with the same smart interface.	●	
<b>OB1 Connection kit</b> A complete set of accessories fitted for the OB1 pressure controller.		●
<b>Kits</b> Connect any pressure source/syringe pump to your device.		●
<b>Reservoirs</b> Gas tight reservoirs with ergonomic fluidic connection.		●
<b>Flow Sensors</b> A line of sensors to monitor very low liquid flow rates.		●
<b>Compressor</b> A safe & secure pressure source for the OB1 pressure controller.		●

## Related Products & Services



**Eppendorf® Microfluidic Tank**  
100% gas tight connection caps.  
1.5 - 2 mL Eppendorf® tubes  
1.5 mL BD Falcon® tubes  
100 mL - 2 L Upchurch® bottle



**Connection Kits**  
Bored of microplumbing issues?  
Our kits enable to easily connect your microfluidic device to any pressure or flow control equipment.



**Broad Product Line**  
Elveflow instruments are designed to work together on your microfluidic setup. Switch valve system, flow rate monitoring,



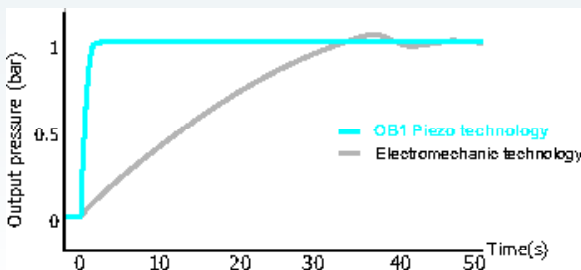
**Service**  
Benefit from our microfluidics PhD team's expertise. Take advantage of our support for specific developments on your setup.



**OEM Solutions**  
All our instruments are highly customizable and available in end user or OEM version and designed to be easily integrated.

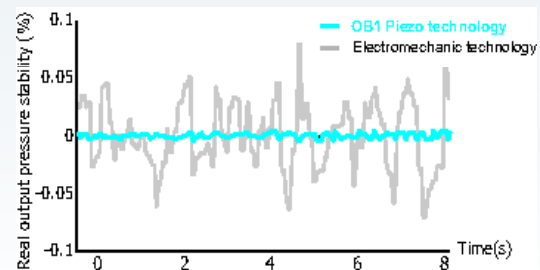
Performance cannot just be told, it must be experienced.

### Responsiveness



Experimental condition: pressure response to a 1 bar step with an output volume of 300 mL.

### Stability



Experimental condition: pressure stability at 150 mbar with an output volume of 2 mL.

- (1) Output stability measured at 150 mBar with an external high accuracy pressure sensor (Druck DPI150) (2) Depending on user computer operating system (3) Volume dependent – Measurement done on 12 mL reservoir for a set point from 0 to 200 mbar  
(4) The VACCUUM channels can be used without vacuum source if only positive pressures are desired. If no VACCUUM channels are present the Vacuum Input can be left open.

It is no coincidence that the most prestigious names trust in us

