ELVEFLOW
PLUG & PLAY MICROFLUIDICS

AF1 Dual

Pressure & Vacuum

The only microfluidic instrument in the world

able to generate pressure & vacuum on the same channel

Partner modules that can deliver pressure & vacuum on the same channel

Vacuum & Pressure **Generator**

Generate vacuum & pressure wherever an electric plug is available.

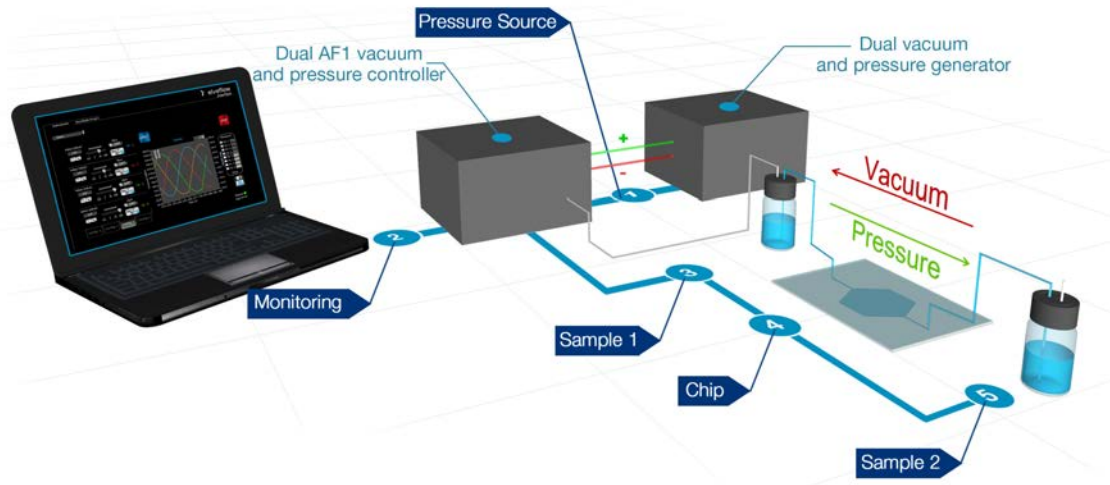
This instrument has been designed to ensure a perfect teamwork with the AF1 Dual Vacuum & Pressure Controller, that would bring the control and accuracy you need. This instrument can also be used independently.

Vacuum & Pressure **Controller**

Regulate negative & positive pressure on the same channel.

This instrument covers a pressure control range from -700 mbar to 1000 mbar. It has to be linked to an external pressure/vacuum source such as the AF1 Dual Vacuum & Pressure Generator to supply regulated vacuum and pressure.

AF1 Dual
PRINCIPLE



1 Pressure Source

The AF1 Dual Controller has to be connected to an external pressure source that can be, for instance, the AF1 Dual Generator.

2 Monitoring

Control the outlet pressure (or the flow rate*) of the AF1 Dual Vacuum & Pressure Controller through the Elveflow Smart Interface on your PC.

3 Sample 1

The liquid stored into this reservoir can be injected into your chip using pressure.

4 Chip

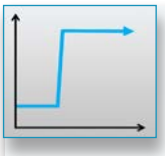
The liquid is smoothly and precisely injected into the microfluidic chip.

5 Sample 2

The liquid stored into this reservoir can be sent into your chip using vacuum.

* flow sensor required.

AF1 Dual
FEATURES & BENEFITS



›Highest Flow Stability
Enjoy a Smooth & Pulseless Flow.
The 1mbar flow stability provided by the AF1 Dual ensures a superior flow performance even at low flow rates, to provide you with low-noise data and quality experimental results upon first time.

›Short Response & Settling Time
Get the Highest Responsiveness.
The piezo technology used for the AF1 enable a blazing fast flow change in your microdevice *(100 ms response time, 100 ms settling time)* to perform amazingly dynamic experiments.

›Bi-directional Flow Control
Master the Flow.
The -700 mbar to 1000 mbar pressure control range allows you to precisely manage positive and negative flow rates on the same channel with the same instrument.

›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.

›Complex Fluidic Profiles
Make the Complex Simple.
Our profile editor will allow you to easily create and program sine, triangle, square, sawtooth and pulses flow profiles to automate the most sophisticated protocols.

› Portability
Performance Anywhere.
The AF1 provides superior portability while keeping performances at high level, to deliver a stable and pulseless fluid flow for the most demanding experiments, anytime, anywhere.

›Setup Synchronization
Communication Skills.
The AF1 offers a TTL triggers set for easily synchronizing your instrument with any Elveflow® device, microscopes or mechanical shutter. That way you can have a full control of all the devices involved in your microfluidic experiment.

›Compactness
Small, yet Mighty.
Subtle experiments sometimes require rather significant space. Fortunately, the AF1is shaped to deliver impressive performances while saving valuable lab bench space (220 x 130 x 130 mm L x l x h).

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
- Alternative instrument control through the provided Labview® and Matlab® libraries, and DLLs

National instruments is our technological partner for embedded electronics

NATIONAL INSTRUMENTS™

AF1
TECHNICAL SPECIFICATIONS

AF1 Unit Pressure range Premium	0 to 200 mbar (0 to 2.9 psi)	0 to 1600mbar (0 to 23 psi)	Dual Pressure & Vacuum Controller -700 to 1000 mbar (-10 to 14 psi)
Type of pressure	Positive	Positive	Negative & Positive
Pressure Sensor Resolution	0.006 % FS 12.2 µbar - 0.00017 psi	0.006 % FS 122 µbar - 0.0017 psi	0.006 % FS 122 µbar - 0.0017 psi
Pressure stability	100 µbar (0.0014 psi) i.e. 0.05 % Full Scale	1 mbar (0.014 psi) i.e. 0.05 % Full Scale	-700 to 500 mBar : 1 mBar 500 to 1000 mBar: 5 mBar
Response time	50 ms		
Settling time	down to 40 ms (1)		
Supply pressure (min - max)	Integrated pump No pressure source needed		Pressure supply needed (1.5 bar min, 2.5 bar max)
Liquid compatibility	Any aqueous or organic solvent, oil, or biological sample solution can be propelled		
Power consumption	15 W (100 V to 240 V - 50 Hz to 60 Hz)		
Weight	1.7 kg		
Case dimensions L x l x h (mm)	220 x 130 x 130		
Output connectors	Stainless steel female luer lock		

(1) Volume dependent – Measurement done on 12 mL reservoir for a set point from 0 to 200 mbar

AF1
PRODUCTS & SERVICES

Elements provided by Elveflow	Included	Optional
Software & libraries Control all Elveflow® instruments with the same smart interface.	●	
AF1 Connection kit A complete set of accessories fitted for the AF1 pressure generator.		●
Kits Connect any pressure source/syringe pump to your device.		●
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.		●

Related Products & Services

› Eppendorf® Microfluidic Tank

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

› 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, temperature control…

› Service

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

› Grants & Partnerships

Elveflow invests in co-development and cooperative projects with academic, SME and industrial partners to take an active part in the development of microfluidics.

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

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