FluidicLab®

Microfluidic flow controller

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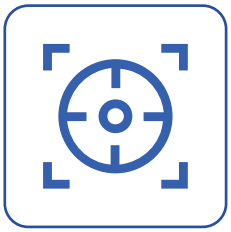
The microfluidic flow controller is an outstanding flow control system based on pressure control. One can accurately control pressure to push and pull liquid, achieving high precision and responsiveness in flow regulation with a personal computer.

The microfluidic flow controller is configurable. one pressure controller supports 1-4 independent pressure and/or vacuum channels and regulation of pressure and/or vacuum down to -1 bar and up to 8 bar. Constant flow rate and pressure waveform can be configured in our software.

Advantages



High precision and responsiveness in pressure control

High precision pressure sensor for high speed PID control,
Response time: <9 ms, Pressure stability: <0.02% FS

Flexible pressure and/or vacuum control range

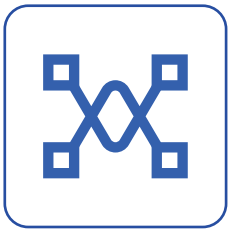
Typical of pressure and/or vacuum control range include 0~0.2 bar, 0~2 bar, 0~8 bar, -0.9~1 bar and -1~6 bar.

Support pressure control waveform

Stable output of waveform pressure by using standard or custom waveform

Support flow control modes

Precise output of pulseless flow when connecting to a flow sensor



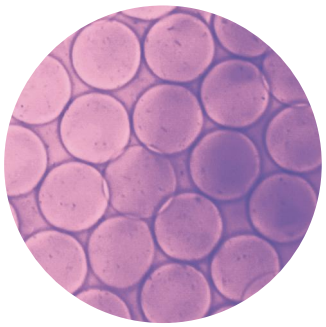
Four independent pressure and/or vacuum control

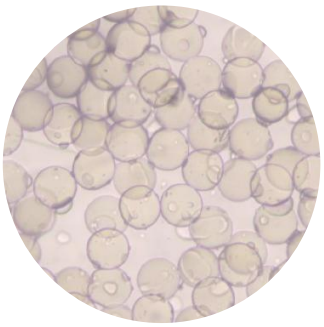
1 to 4 independent pressure and/or vacuum control, support for customisation and upgrades

Applications

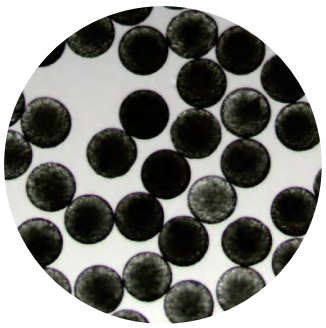
FluidicLab develops an outstanding flow control system ideal for microfluidic-based application, which is widely used in a range of research fields including digital microfluidics, organ on chip, cell culture, flow chemistry, drug screening, regenerative medicine and single cell analysis. Learn more on our website ***https://en.fluidiclab.com.***

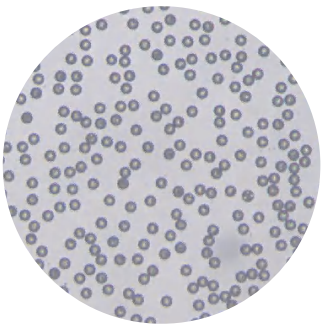
- **Hydrogel microspheres for drug screening/ cell culture/single cell analysis**



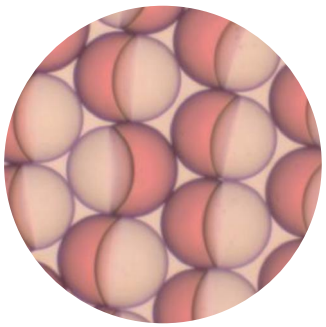


- **Polymer microspheres (such as PLA, PLGA, PCL) for drug release/cartilage regeneration**

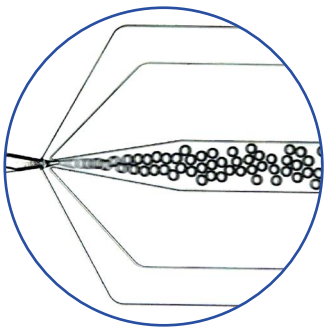




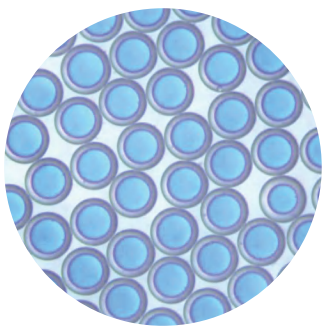
- **Janus microspheres**

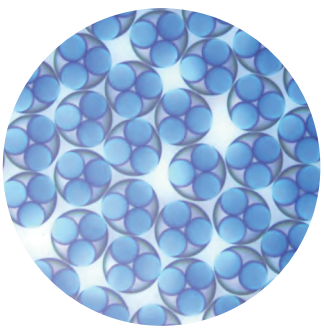


- **Microbubbles for contrast agents**



- **Double microdroplets**



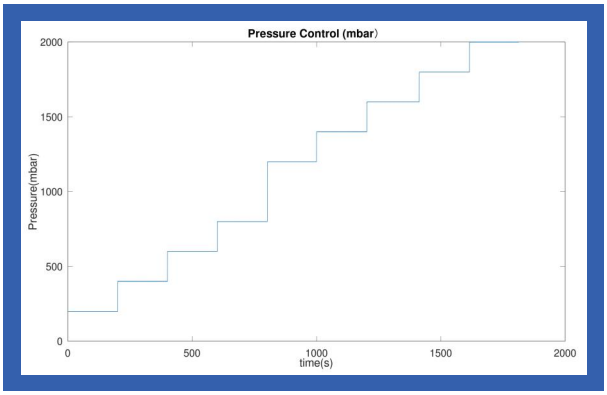


- **Other applications including digital PCR, et al.**

Features of our microfluidic flow controller

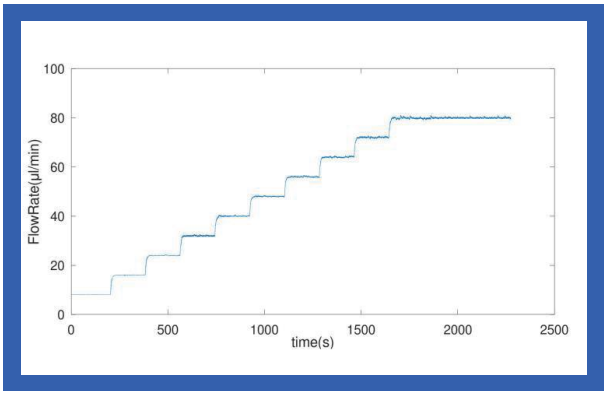
1.Outstanding microfluidic pressure controller

- High precision pressure sensor for high speed PID control, Response time: <9 ms, Pressure stability: <0.02% FS.
- Capable of various applications requiring: pressure and/or vacuum, low or high flow rate, short or week-long experiments.
- Stable output of waveform pressure by using standard or custom waveform.



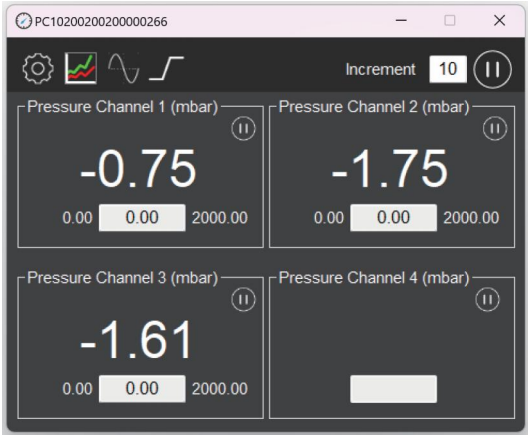
2.Precise output of pulseless flow when connecting to a flow sensor

- The key in flow rate control is an integrated temperature sensor chip, which measures precisely through thermal difference.
- The pressure output is controlled via feedback algorism to achieve a smooth, pulseless and flow monitoring.
- The response time of flow control is less than 40 ms, which is capable in various applications of different flow resistance.



3.Customizability and upgradability

- The PC1 can be configured as required.
- One PC1 supports 1~4 pressure and/or vacuum channels and regulation of pressure and/or vacuum down to -1 bar and up to 8 bar.
- Each pressure and vacuum channel is independently controlled.

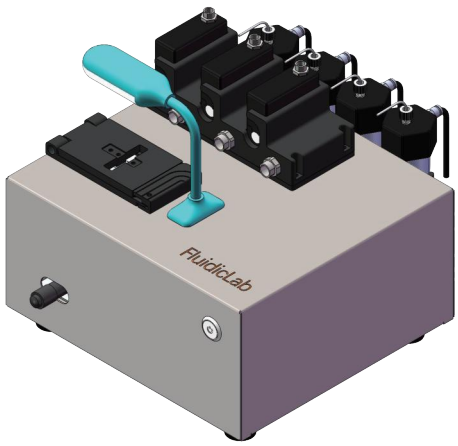


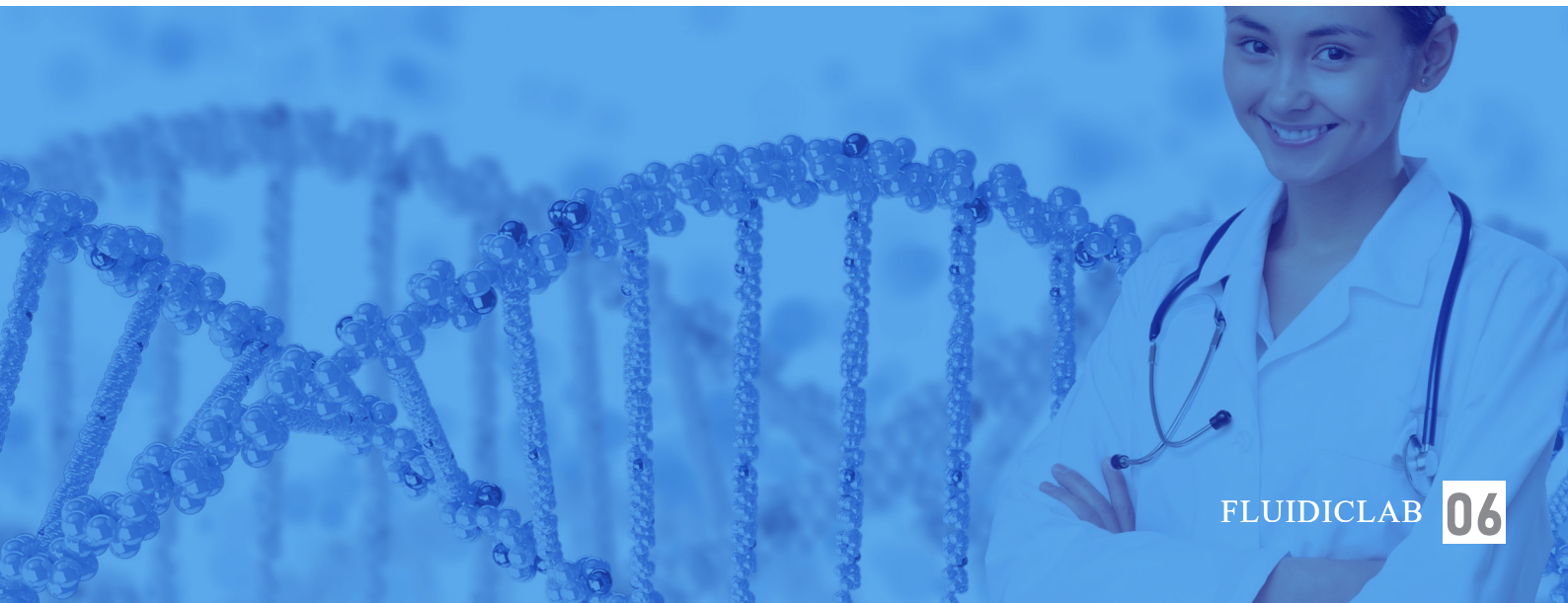
4.Various reservoir sizes

- Provide reservoir sizes from 1.5 mL to 10 L.
- The PC1 is able to maintain continuous, pulseless flow for week-long experiments without refilling.

5.OEM version available

- The PC1 can be embedded in your own system.
- FluidicLab has a solution for every step in your research & development.





Specifications

PC1 pressure controller

PC1 Channel Pressure Range	0~200 mbar	0~2000 mbar	0~8000 mbar	-1000~1000 mbar	-1000~6000 mbar
PC1 Available Pressure Range	6~194 mbar	0~1940 mbar	0~7760 mbar	-9000~970 mbar	-900~5820 mbar
Pressure Stability	Fluctuation less than 0.02% of full scale				
Response Time	9 ms				
Pressure and Vacuum Supply	1.5~10 bar			-1 bar (Input Vacuum) 1.5~10 bar	-1 bar (Input Vacuum) 1.5~10 bar
Liquid Compatibility	Non-contact pump Any aqueous, oil, or biological sample solution				
Gas Compatibility	Any non-corrosive, non-explosive dry gas				

Others

● **Flow Control**	
Flow Sensor Compatibility	Compatible with all FluidicLab flow sensors Monitoring and feedback loop flow control available
Full Scale Flow Rates	0.07 ~ ±40000 µL/min
Liquid Compatibility	Any non-strong alkali, non-strong acid, aqueous, partially oil, or biological sample solution.
Response Time	<40 ms
Working Temperature	10 ~ 50 ℃
Store at	-10 ~ 60 ℃
Features	both bidirectional and linear response
● **Control & Monitoring**	
Sorfware Control	FluidicLab Suite Windows 7, 8, 10 and 11, both 32- and 64-bit versions supported
● **Other**	
Power Consumption	(24 V-50 Hz)
Casing Dimensions	(length×width×height): 220 mm × 200 mm × 110 mm
Weight	1.5~2.5 kg

* The models of flow sensor are shown in the following table.

Flow sensor Model

Model	Full Scale Flow Rates**(μL/min)	Accuracy of Measured Value (μL/min)	Inner Diameter (μm)	Input	Material	USB Conection	Casing Dimensions (mm)	Weight
FS1	0 ~ ±1.5	10% of measured value [± 0.07 ~ ± 1.5]	25	1/4-28 UNF	Quartz	mini USB	50×53×26	136 g
		7 nL [-0.7 ~ + 0.7]						
FS2	0 ~ ±7	5% of measured value [± 0.4 ~ ± 7]	150					
		20 nL [-0.4 ~ + 0.4]						
FS3	0 ~ ±80	5% of measured value [± 2~ ± 80]	430					
		120 nL [-2 ~ + 2]						
FS4	0 ~ ±1000	5% of measured value [± 40~ ± 1000]	1000					
		2 μL [-40 ~ + 40]						
FS5	0 ~ ±2000	5% of measured value			316L		36×48×26	82 g
		0.5 μL/min (whichever error is larger)						
FS6	0 ~ ±5000	5% of measured value [± 200~ ± 5000]	1800		Borosili cate glass		50×53×26	136 g
		10 μL [-200 ~ + 200]						
FS7	0 ~ ±40000	5% of measured value	1400		316L		36×48×26	82 g
		50 μL/min (whichever error is larger)						

** The flow rate calibration of water / IPA has been initially done. Unless otherwise stated, all data mentioned is measured with water under 20 °C, 1 bar..

ABOUT US

FluidicLab is committed to providing the professional microfluidic solutions.We focus on...

Development & manufacture of microfluidic control systems.

We provide intgrated systems, such as smart LNP generator, microdroplet/microsphere generator, microfluidics distribution system, along with standard microfluidic devices including precision pressure controller, flow sensor, sensorreader, microfluidic distribution valve, solenoid valve and controller, etc.

Design & fabrication of microfluidic chips.

We provide customized service of microfluidic PDMS/glass/COC chips from design to fabrication. Organ/organoid chip customization is also available.

Development & manufacture of ODM/OEM systems.

Since the beginning of our business, FluidicLab has developed equipment in mRNA vaccine production (for pilot scale), library construction for single-cell transcrpitome analysis. Fluid control system for single-cell spatial transcriptome and its sample preparation, liquid handling for CAR-T cell preparation, and equipment for digital PCR are well developed.

CRO service.

Provide CRO of barcode beads, organoid cultivation, single cell encapsulation, etc., as well as technical consultations of optimizing experimental procedures and industrial scale-up production.

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