

# Microfluidic Controller

## PG-MFC series

### Introduction:

The PreciGenome microfluidic pressure/flow control system (PG-MFC series) provides pulse-free precise positive and negative pressure. Stable constant flow rates can be set and controlled when used in conjunction with external liquid flow sensors. The microfluidic pressure controller operates in a wide range with fast response time and high accuracy.

Our pressure controller software provides a user-friendly interface with an integrated touch screen. No external computer is needed even for complicated process configuration.



### System Benefits:

- Compact and portable design
- Precise and accurate pressure/flow outputs
- Controllable liquid flow rate output with external liquid flow sensors
- Controlled sample volume injection with external liquid flow sensors
- Easy connection with Luer lock standard connectors
- No external pressure source required (can be connected to an external pressure source for higher pressure)
- No external computer required
- Compatible with PreciGenome pinch/isolation valves, rotary valves, high-speed imaging system
- Air flow rate monitoring; air leakage detection

- CAN, USB and digital IO ports available
- OEM service and module integration available



### System Contents:

- PG-MFC controller, 1 pc
- Power supply 110/220V, 1 pc
- Microfluidic Luer Lock Fittings Kit for Pressure Controller Connection, 2 sets
- Liquid flow rate sensor (optional)
- Microfluidic reservoir kit, 1.5/2ml, 15ml, 50ml, 100/200ml (optional)
- Microfluidic reservoir connectors, up to 230ul, 30/pack (optional)

### Applications:

- Liquid handling
- Automatic reagent distribution, sequential injection of reagents with controlled volume
- Instrumentation for point of care testing,
- Analytical Instrumentation
- Droplets generation & applications (dPCR, single cell encapsulation, NGS target sample enrichment, etc.)
- Organic /polymer syntheses, nanoparticle syntheses, such as PLGA, liposome synthesis
- Drug transportation studies
- Cell culture and cell perfusion
- Organs-on-a-chip
- Other microfluidics applications to manipulate fluids

[www.precigenome.com/microfluidic-pump-pressure-flow-con](http://www.precigenome.com/microfluidic-pump-pressure-flow-con)

**System Specifications:**

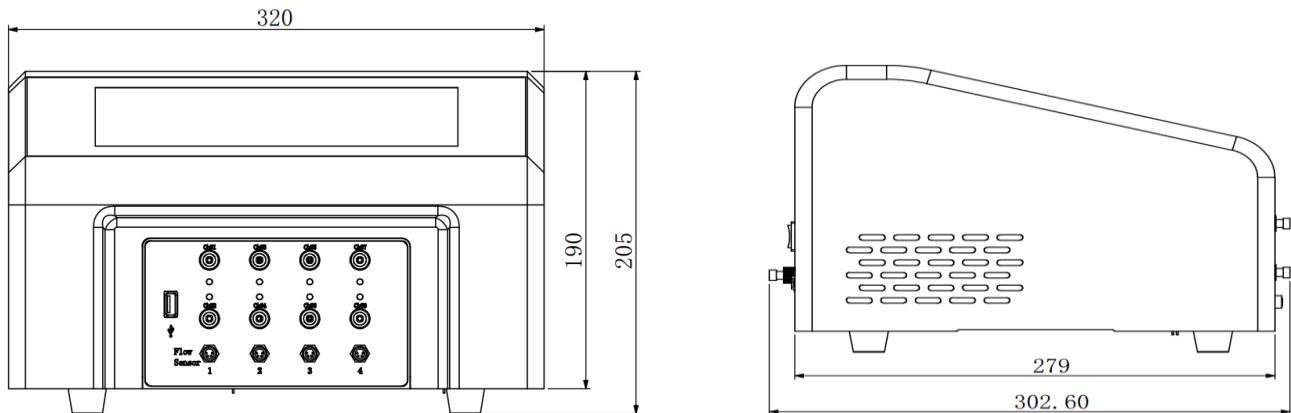
- Pressure sensor accuracy of  $\pm 0.25$  %FSS BFSL (Full-Scale Span Best Fit Straight Line), sensor resolution: 0.0061 %
- Pressure stability: 0.05 %
- Flow rate repeatability: below 1% of the measured value
- Highest liquid flow sensitivity down to  $<1$   $\mu\text{l}/\text{min}$
- Maximum flow rate for water-based liquids: 10 ml/min;
- Maximum flow rate for hydrocarbons: 80 ml/min

Table of detailed specifications for different models:

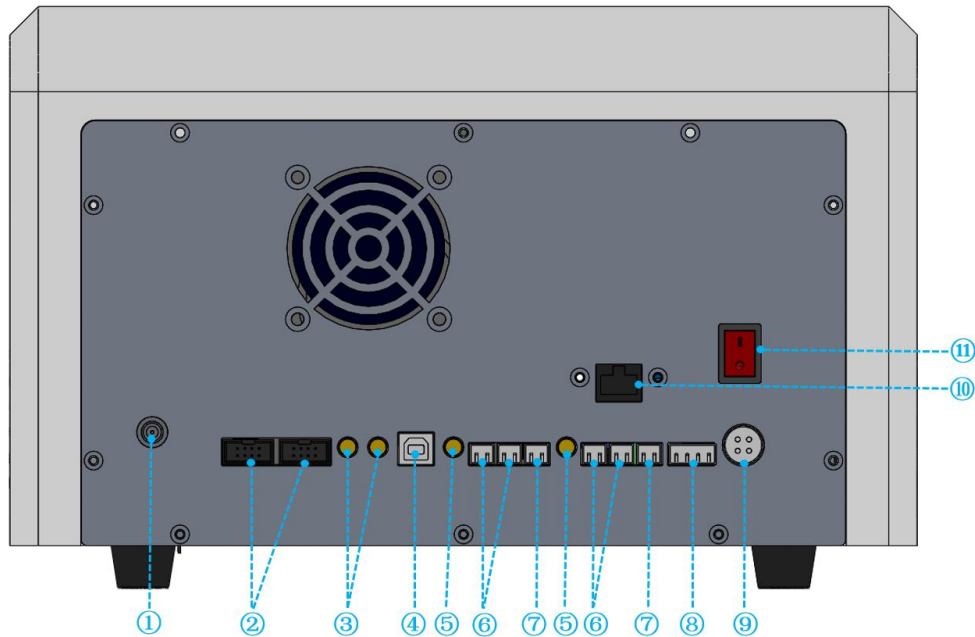
Specifications	PG-MFC-4CH	PG-MFC-8CH	PG-MFC-X
Output channels	4 channels	8 channels	customer defined
Pressure output connection type	Luer lock (Female)		customer defined
External pressure input connection type	Luer lock (Female)		customer defined
Number of independent channels	2	4	More channels can be integrated
Independent channel 1	Pressure range: -450 to 900mbar(-7 to 13psi) with internal pressure source		Higher pressure can be achieved
Independent channel 2	Pressure range: 0 to 900mbar(0 to 13psi) with internal pressure source (if configured to connect with external pressure source, pressure range: 0 to 2100mbar(0 to 30psi))		Maximum pressure: 7000mbar(100psi)
Independent channel 3	N/A	Pressure range: -450 to 900mbar(-7 to 13psi) with internal pressure source	Higher pressure can be achieved
Independent channel 4	N/A	Pressure range: 0 to 900mbar(0 to 13psi) with internal pressure source (if configured to connect with external pressure source, pressure range: 0 to 2100mbar(0 to 30psi))	Maximum pressure: 7000mbar(100psi)
Pressure accuracy	0.25% (Full scale)		
Pressure stability	$< 0.05\%$		
Pressure stabilization time	$< 0.5\text{s}$		
External pressure source	10 to 60psi, non-corrosive, non-flammable, dry and oil free gases		
Reagent compatibility	Reagents can't flow into the instrument		
Touch screen	10 inch		
Power supply	110/220V		
Software functions	Provide interface for pressure and time setting and complicated time dependent process script editing, and I/O control interface; Users can monitor real-time pressure data; Users can also download pressure control data and export data to Excel data sheet		customized software
Communication	RS232/ethernet, USB3.0, I/O interface: capable of triggering external camera image aquisition and valve control		customized communication interface
flow rate measurement and control	Capable of connecting with external flow sensor to measure flow rates and achieve flow rate control. 5 types of flow sensors with different flow rate ranges can be chosen: $0 \pm 5\text{ml}/\text{min}$ , $0 \pm 1\text{ml}/\text{min}$ , $0 \pm 80\mu\text{l}/\text{min}$ , and ultra low flow rate $0 \pm 8\mu\text{l}/\text{min}$ and $0 \pm 1.5\mu\text{l}/\text{min}$		customized flow rate range

**Dimensions:**

Unit: mm



**Electrical Connections:**



- ① Luer connector for external pressure source
- ② Digital I/O ( IN1 & IN3  $\leq$  3.3V )
- ③ Trigger input 3.3 - 24V ( IN2 & IN4 )
- ④ USB to serial port
- ⑤ Trigger output (No load capacity)
- ⑥ Controllable 24V output
- ⑦ DC 24V output
- ⑧ CAN
- ⑨ Power connector
- ⑩ RJ45
- 11 Power switch

**Warning: Hot plugging is not supported**