

The PneuWave Microfluidic Pump

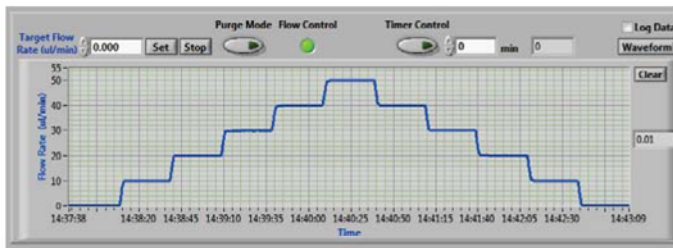
Fluid delivery for microfluidics demands special attention. The PneuWave is a high-precision, closed-loop, programmable, pulse-free pump that will help make your microfluidic application a success.

And it is all electric!

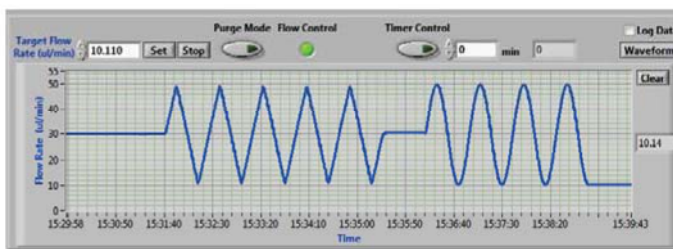


A New Age of Fluid Delivery Pumps

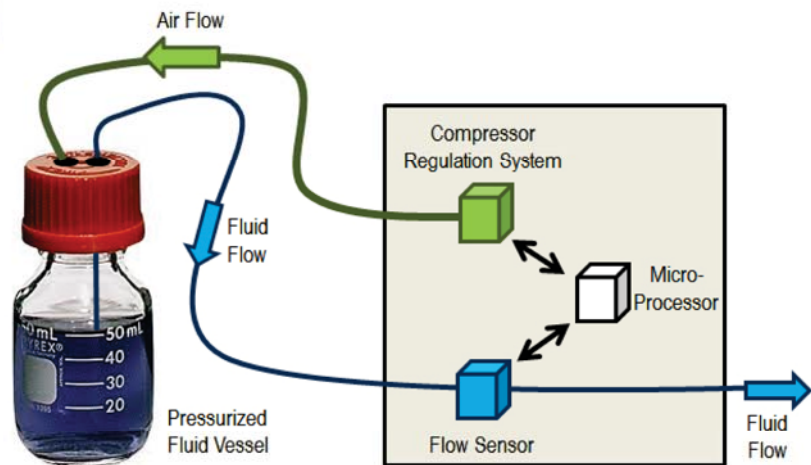
The PneuWave offers superior control, fast response, and exceptional performance. It can be operated from either the front display or from a computer.



10 μ L step intervals from 0 to 50 μ L every 60 sec with the PneuWave pump.



Precision response and control of the PneuWave pump. Demonstration of a pulseless flow followed by triangular and sine programmed waveforms.



A schematic of the PneuWave pump is shown. The pump consists of a compressor regulation system and a flow sensor which are in constant communication with a microprocessor. The compressor regulation system pressurizes a fluid vessel, which can vary in size from a microvial to a several liter bottle, causing fluid to be displaced from the vessel. The fluid passes through a flow sensor which measures the actual flow rate and the information is communicated with the microprocessor. If needed, the microprocessor can then send commands to the compressor regulation system to adjust the flow rate. In addition to this flow rate controlled mode, the PneuWave pump can also operate in pressure controlled mode. In pressure controlled mode, the compressor regulation system is set to a value and is not adjusted based on the flow sensor reading.

Operating over a wide flow range of nL/min to mL/min, the CorSolutions' pneumatic PneuWave pump offers a flexible solution for microfluidic applications. This pulse-free pump provides good precision, fast response time, and has a low-dead volume fluid path.

The pump pressurizes an easy-to-access fluid vessel which can range in volume from a few microliters to greater than a liter. The vessel is pressurized with a quiet, integrated, miniature pressure regulation system. Once the vessel is pressurized, fluid is displaced through the tubing. An in-line flow sensor measures the actual displacement or flow rate. When operated in flow controlled mode, both the flow sensor and the compressor regulation system are in continuous communication with a microprocessor. Based on the flow sensor readings, the microprocessor sends commands to the compressor regulation system, allowing for highly accurate flow control with nanoliter resolution. In this manner programmable flow profiles can be achieved. Alternatively the PneuWave pump can be operated in pressure controlled mode where the compressor regulation system is set at a user-defined value and any adjustments based on the flow sensor readings, are no longer made.

PneuWave pumps can be configured with one to eight channels. When using multiple channels, fluid streams can be accurately manipulated independent of one another.

PneuWave pumps arrive calibrated for aqueous solutions, and have the ability to store additional calibrations for different fluids. This pump has a maximum operating pressure of 30 psi and comes in four models to accommodate various flow rates.

PneuWaves also can be operated by the front display panel, user-friendly stand-alone software, or LabVIEW software. This software allows for programmable fluid delivery.

In addition to microfluidics, the PneuWave pump can be used for various infusion-based applications such as introducing make-up flows or calibrating instruments.

Models Offered

- PneuWave Nano 20-7000 nanoliters/min
- PneuWave Micro 0.1-50 microliters/min
- PneuWave Milli 30-1000 microliters/min
- PneuWave Milli +5 0.2-5.0 milliliters/min

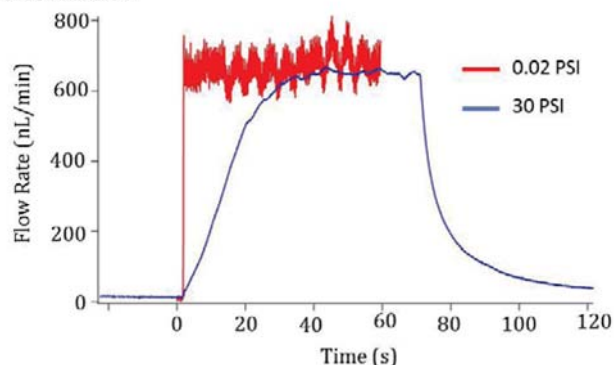
Models can operate outside the ranges provided. However flow rate measurement will be most accurate when operated within the corresponding ranges for each model.

PneuWave Advantages

- Precise, accurate flow rate control
- Nanoliter resolution
- Pulse-free
- Superior performance to syringe pumps and traditional peristaltic pumps
- Fast response
- Small and large pressurized fluid vessels
- Programmable fluid delivery controlled with user-friendly software
- Can be operated through either the front display or PC software (stand-alone and LabVIEW)
- Configurable with 1 to 8 channels that can be controlled and adjusted independently
- Can store multiple calibrations for accurate flow rate control of different liquids
- Can operate in either flow rate or pressure controlled mode
- Low dead-volume fluid path
- Pump contains a built-in, quiet compressor - No external compressor!
- Offers both digital and analog outputs

Syringe Pumps Compromise Performance

Syringe pumps are the most widely used means of fluid delivery for microfluidics. However these pumps suffer from drawbacks that severely compromise performance and can negatively impact your microfluidic application. These drawbacks include: pulsation, slow response time, refilling of syringes is required, increased chance of air bubble introduction during syringe refill, and backpressure variations significantly effect performance.



Fluid delivery using a syringe pump is undesirable. If backpressure is increased, the pulsation is reduced, but then the response time increases.

※価格についてはお問い合わせください。

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