



How it works

The micropump system has been developed specifically for use in medical applications. A typical area is the transfer of nutrients for growing cell-cultures. The pumpsystem can handle up to 10 channels in parallel to convey as many different nutrient-solutions.

The pumpmotor turns the pump-rotor which in turn moves the medium contained in the tubes. The transport can pump in 2 directions. Tube diameter can be tailored to deliver required volumes. Pump concept allows homogeneous and bubble free delivery of mediums.

The micropump is a modular unit. In applications that require stringent hygienic controls, pump-heads can be disposed after use. The pumpmotor and gearbox can be re-used after easy exchange of the pump-heads.

Application areas

- Medical technology
- Pharmaceuticals
- Diagnostics
- Biotechnology
- Analytic

Another advantage of the modular construction makes it possible to define a wider selection of motors to fit the application.

Different industrial applications are also possible.

About us

DNE GmbH develops and produces microfluidic systems to customer specifications. In close partnership it targets markets in

- Analytics applications
- Diagnostics applications
- Laboratory technology
- Biotechnology

DNE is a competent partner with essential expertise for microfluidic systems including plastic technology, coating, sealing, testing and fluidic transfer. A specialist team concentrates on project management and product development: Reliable, fast and competent.

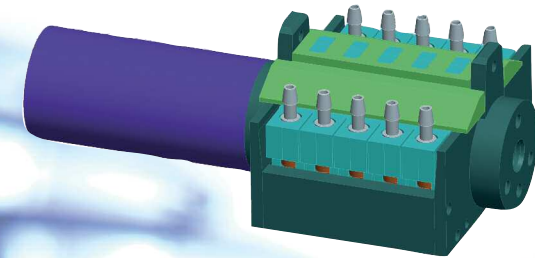


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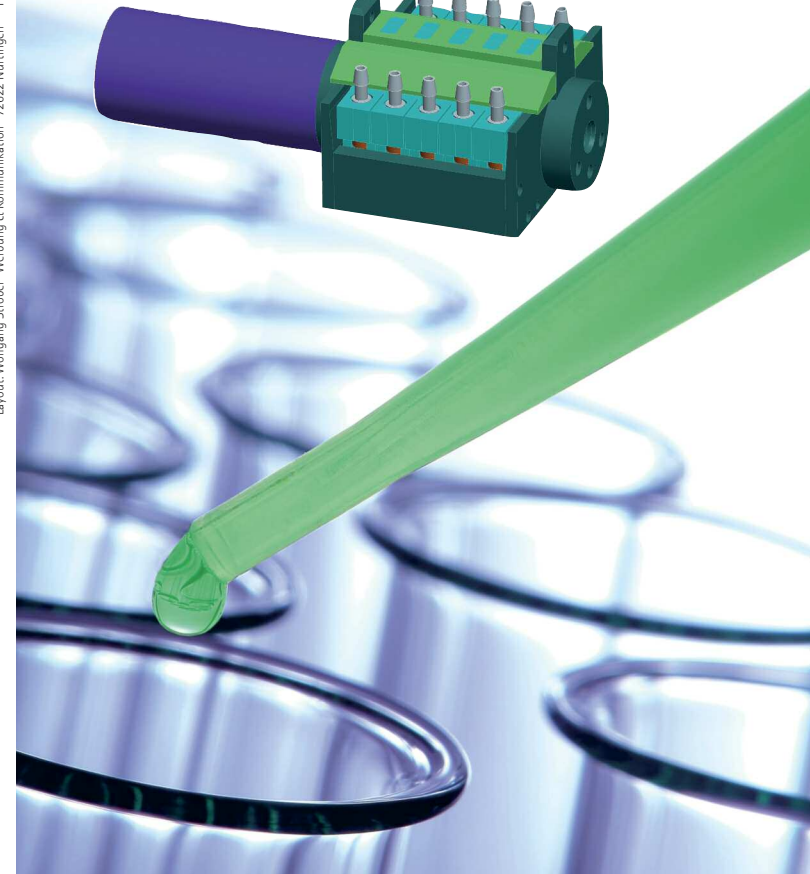


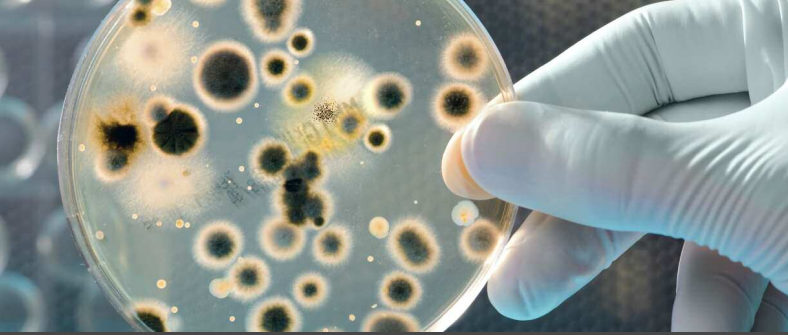
Modular Microliter Pump

Peristaltic concept
2 to 10 parallel channels
Exchangeable pumpheads



Photos: Thinkstock, iStockphoto, Panthermedia
Layout: Wolfgang Strobel · Werbung & Kommunikation · 72622 Nürtingen





Advantages of the DNE microliter pump

To transfer gasses or fluids in diagnostics applications, the typical pump selection is a membrane pump. These pumps are compact, are inexpensive and have a relatively long lifetime. On the other hand this pump concept has a number of weaknesses that can prevent use in various applications. The pump-action is not bi-directional and has a low suction or back-pressure characteristic. Moreover, the back-pressure valves are fragile, give rise to dead-volume and generate pulsating flows.

Alternative is the peristaltic concept which provides a well-defined pump volume. Suction and back-pressures are higher and flow is homogeneous. Although prices are higher in comparison to membrane pumps.

The DNE pump provides a system combining the performance of a peristaltic pump for the cost of a membrane pump.

- The pump consists of 2 separate modules: A motor unit and a low cost disposable pumphead.
- The pumphead does not require a valve. Its characteristics prevent free-flow in cases of back-pressure.
- The disposable pumphead can handle many fluids or gasses. In case of fluids, handling is bubble free.
- The pump characteristics allow 2-directional pumping.
- The drive assembly can be fitted with a low-cost motor or with stepper motor in case of more challenging specifications.
- The pumphead is easily locked or unlocked into the drive assembly. Exchanging disposable pumpheads is done in seconds.

- Multi-channel pumpheads allow a maximum of 5 tubes of different diameters. The system can be extended to 10 tubes.
- The complete pump system is compact.
- The system provides a sustainable solution by separating drive assembly from the disposable pumphead.

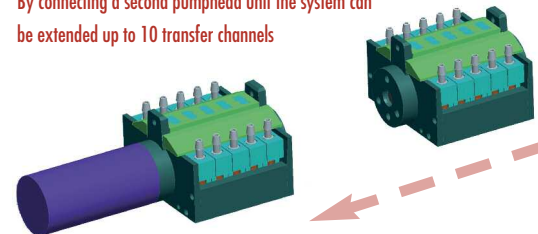
The micropump concept is applicable to customer specific requirements and can be tailored to fit many different environments.

Technical data

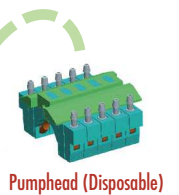
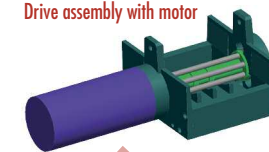
Medium	Various fluids, e.g. air, gas, water, nutrients
Min. transfer rate	5µl/min
Max. transfer rate	3ml/min
Tube	min. 0,25 mm, max. 1,85 mm inner diameter
Medium temperature	5 – 95°C
Max. suction height	0,3 bar
Max. back pressure	3,8 bar
Power consumption	< 200 mW (motor dependent)
Dimension	Total system (without motor): 60x55x38 mm Pumphead: 49x52x27mm

Modular:

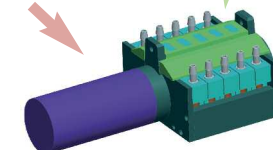
By connecting a second pumphead unit the system can be extended up to 10 transfer channels



Drive assembly with motor



Pumphead (Disposable)



Total system with motor