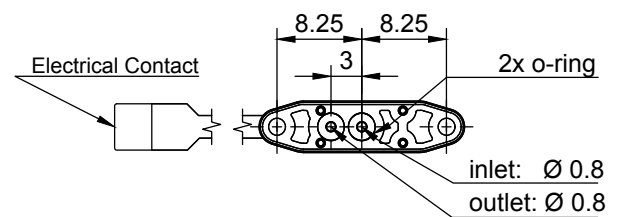


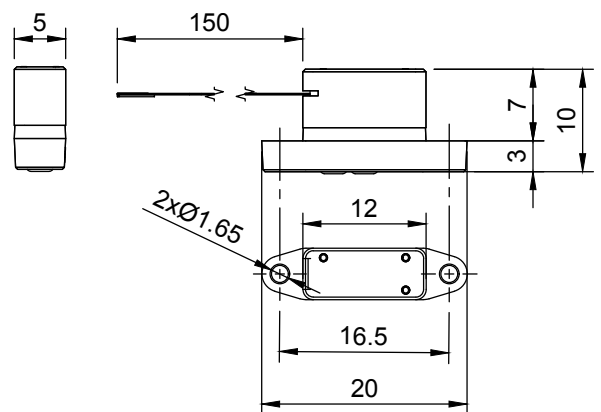
Bistable Microvalve *pre-series*

Preliminary Datasheet

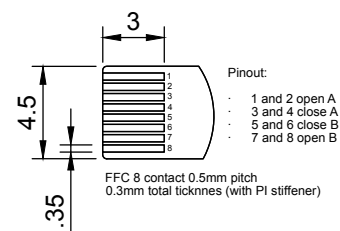


This media-separated bistable 2/2-way microvalve is an ultra-compact, lightweight device that is characterized by extremely low power consumption. This makes it particularly interesting for mobile applications based on battery operation. Its media-separated design makes it compatible with both liquids and gases, making it highly versatile in a range of application areas such as life sciences, microfluidics, diagnostics and aerospace.

In summary, the memetis bistable microvalve sets a new benchmark for efficiency and effectiveness in the field of microvalve technology.



Electrical Contact Detail



Contact Information

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 Tel. +49 721 547000240
 Email: support@memetis.com

Dimensions in [mm]
 CAD model available on request

General Information

Model ID	MVL-22-BI-08-12P-PEEK-SIL
Type	2/2-way, media separated
Functionality	Switching between open/closed states by a current pulse. When unpowered, the state is maintained by bistable magnetic latching mechanism.
Media types	Liquids, gases
Dimensions (WxLxH)	20 mm x 5 mm x 10 mm
Nominal orifice DN	0.8 mm
Weight	1.5 g
Internal volume	< 6.5 μ l
Fluidic connection	Flange mount (2x M1.6 screws), silicone o-rings included
Leakage rate	< 1×10^{-3} (mbar x l)/s
Cycle life-time	> 500.000 cycles

Performance Data

Min. relative input pressure	0.0 bar
Max. relative pressure (inlet)	1.0 bar
Max. relative pressure (outlet)	0.5 bar
Operating temperature	10 °C to 50 °C ambient temperature
Storage temperature	-20 °C to 90 °C
Switching time (open)	< 0.25 s (at $\Delta p = 1$ bar and 20 °C ambient temperature)
Switching time (close)	< 0.25 s (at $\Delta p = 1$ bar and 20 °C ambient temperature)
Flow rate (air)	2500 ml/min \pm 25 % (at 1 bar pressure difference)
Flow rate (water)	80 ml/min \pm 25 % (at 1 bar pressure difference)
K_v value (water)	0.005 m ³ /h

Wetted Materials

Housing	PEEK
Sealing membrane	Silicone (contact us for different materials)
O-rings	Silicone (contact us for different materials)

Electrical Specifications

Electronic control	Current pulse controlled
Electrical connection	150 mm flex cable, FFC interface Compatible with connector type TE 2328702-8
Electrical power consumption	< 0.5 J for each switch between the states (< 0.7 W for 0.5 s)
Actuator resistance	1.00 Ω \pm 10 %
Current pulse	800 mA for 500 ms (at 20 °C ambient temperature)

⚠ Please note:

- The valves are current pulse controlled. For easy integration and evaluation we offer electronic control units.
- An electrical overcurrent and/or wrong pulse/time period may reduce cycle life-time or even destroy the valve.
- We recommend validating the required current pulse within your specific application and ambient conditions.
- Do not attempt to operate the valve at constant voltage or constant voltage pulse!

FFC connector, 01x08, 0.5mm pitch

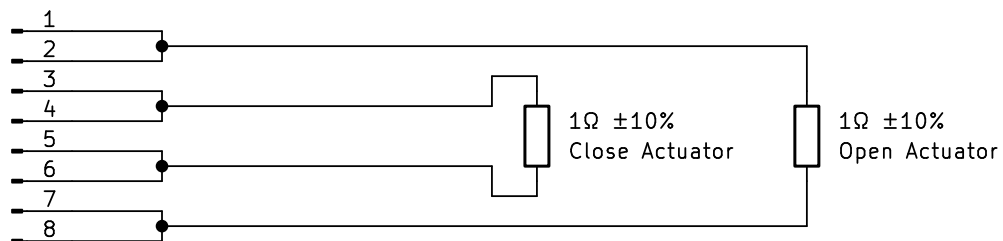


Figure 1: Pin-out schematic of the FFC connector. Please contact us for exemplary circuit design for constant current source.

Installation

memetis miniature valves have a flange mount connection. Two M1.6 screws are required for integration on a flat backplane with fluidic connection holes of 0.8 mm nominal diameter. The o-rings needed for sealing interface are integrated underneath the valve.

Accessories

ECU-S1	Electronic control unit (open/closed) for 1 valve
Tube adapters	Suitable for interfacing 1 or 2 valves with 1 mm ID silicone tubes
Threaded adapters	For 1, 2, 4 valves with a common inlet or outlet. Suitable for connecting UNF 10/32 threaded connectors, e.g., LUER®, IDEX® or Festo®.
Bistable valve bundles	A bundle includes a valve, an adapter of your choice and an ECU-S1



Figure 2: ECU-S1, valve adapters and bundles are available from the memetis online shop at shop.memetis.com

Flow Characteristics

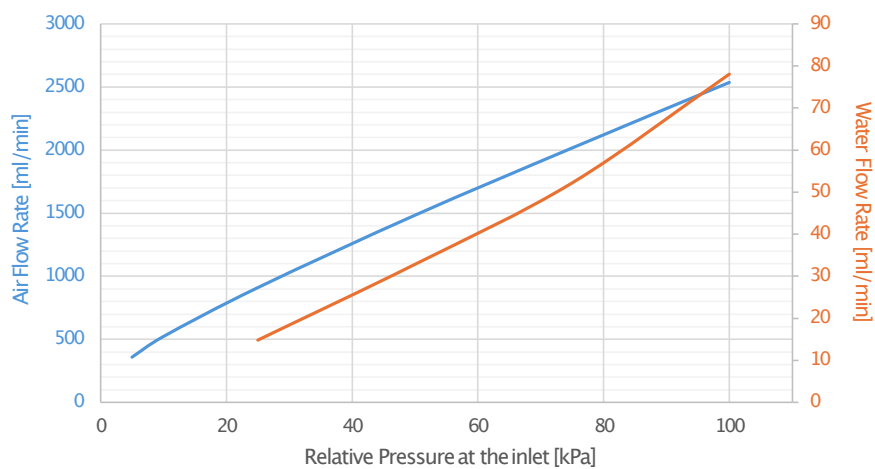


Figure 3: Flow rate characteristics for air and water at 20 °C with an applied pressure difference of 0.05 bar to 1 bar for air and 0.25 bar to 1 bar for water.

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