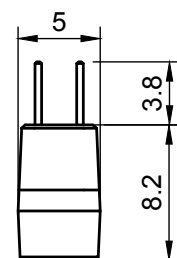
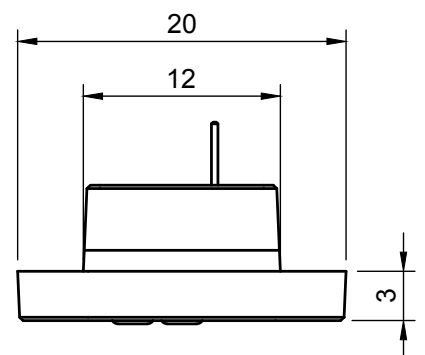
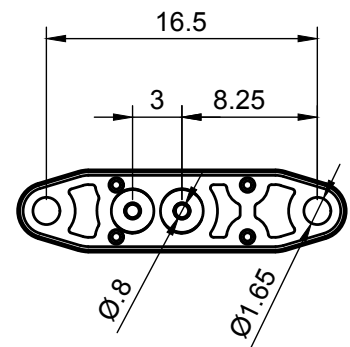
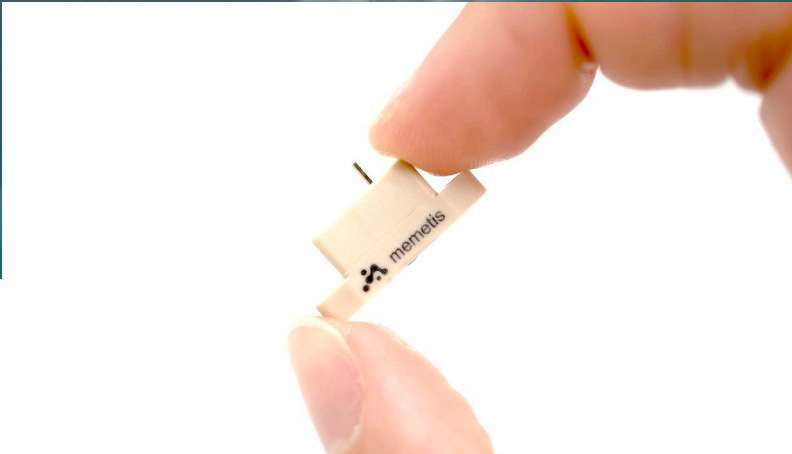


Normally Closed Microvalve *negative pressure*



The 2/2-way normally closed microvalve is a ultra-compact, lightweight device designed with cutting-edge actuation technology using a shape memory alloy. Its media-separated design makes it compatible with both liquids and gases, making it highly versatile across a range of application areas such as life sciences, microfluidics, diagnostics, and aerospace.

Notably, the microvalve delivers an exceptional fluidic performance for its size while maintaining minimal power consumption, setting a new benchmark in efficiency and effectiveness in the realm of microvalve technology.

Contact Information

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

Dimensions in millimeters
CAD model available on request

General Information

| | |
|--------------------|--|
| Model ID | MVL-22-NC-08-03P-PEEK-SIL |
| Type | 2/2-way, media separated |
| Functionality | Normally closed valve: on/off, proportional control possible |
| Media types | Liquids, gases |
| Dimensions (WxLxH) | 20 mm x 5 mm x 8 mm |
| Nominal orifice DN | 0.8 mm |
| Weight | 0.8 g |
| Internal volume | < 6.5 µl |
| Fluidic connection | Flange mount (2x M1.6 screws), silicone o-rings included |
| Leakage rate | < 1 x 10 ⁻³ (mbar x l)/s |
| Cycle lifetime | 30 x 10 ⁶ cycles |

Performance data

| | |
|---------------------------------|--|
| Min. relative input pressure | -0.7 bar |
| Max. relative pressure (inlet) | 2.0 bar |
| Max. relative pressure (outlet) | 2.0 bar |
| Operating temperature | 10 °C to 50 °C |
| Storage temperature | -20 °C to 90 °C |
| Switching time (on) | < 0.05 s (at Δp = 1 bar and 20 °C ambient temperature) |
| Switching time (off) | < 0.16 s (at Δp = 1 bar and 20 °C ambient temperature) |
| Flow rate (air) | 2800 ml/min (at 1 bar relative pressure) |
| Flow rate (water) | 85 ml/min (at 1 bar relative pressure) |
| K _v value | 0.0045 m ³ /h |
| Autoclavability | Yes (tested at 134 °C and 2 bars) |

Wetted Materials

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

Electrical Specifications

| | |
|------------------------------|---|
| Electronic control | Constant current controlled |
| Electrical connection | Pin header, pitch 2.54 mm (contact us for different connection) |
| Electrical power consumption | < 0.25 W |
| Actuator resistance | 1.05 $\Omega \pm 20\%$ |

Continuous current control

| | |
|-------------------------------|--|
| Continuous electrical current | 500 mA (at 20 °C ambient temperature) |
| Electrical power consumption | 0.25 W (at 20 °C ambient temperature) |
| Continuous electrical current | 350 mA (at 50 °C ambient temperature) |
| Electrical power consumption | 0.125 W (at 50 °C ambient temperature) |

Electrical current profile control

| | |
|-----------------------------------|---|
| Peak and hold electrical currents | 750 mA for 50 ms, 375 mA continuous (at 20 °C ambient temp.) |
| Electrical power consumption | < 0.6 W for 50 ms, < 0.15 W continuous (at 20 °C ambient temp.) |

Please note:

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

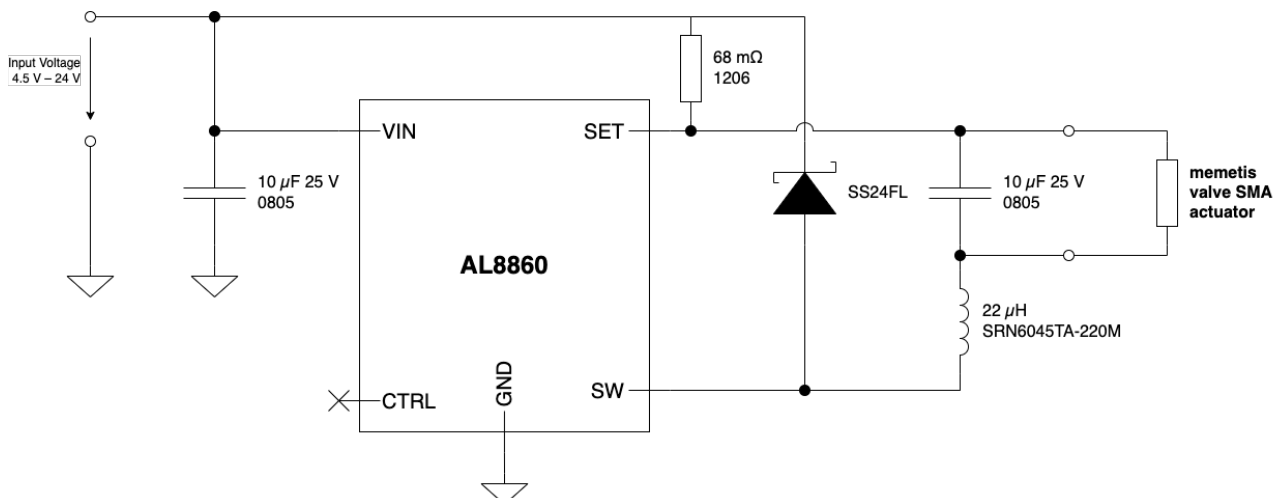


Figure 1: Exemplary circuit design for constant current source

Flow Rate Characteristic

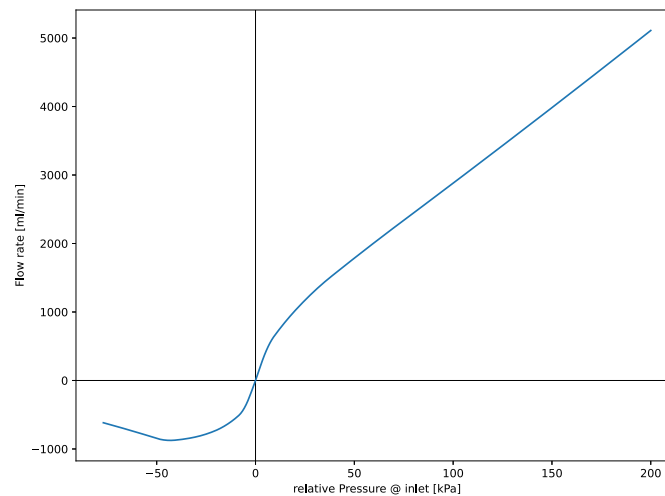


Figure 2: Flow rate characteristic for air at 20 °C, an applied pressure difference of -0.7 bar to 2 bar, and a continuous electrical current of 500 mA.

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 orifice. The o-rings needed for sealing interface are integrated underneath the valve.

Accessories

| | |
|-------------------|--|
| ECU-S1 | Electronic control unit (on/off) for 1 valve |
| ECU-P2 | Programmable and GUI supported electronic control unit for 2 valves |
| Tube adapters | Suitable for interfacing 1 or 2 valves with 1.6 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® or IDEX®. |



Figure 3: ECUs and valve adapters are available from the memetis online shop at shop.memetis.com

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