HNP Mikrosysteme

High performance series

# Micro annular gear pump mzr®-4605

For industrial production and process technology


- **High dosage precision**
  precision CV < 1 % at low volumes
- **High differential pressures**
  achievable also for low viscosity liquids
- **Compact dimensions**
  length 143 mm, including controller
- **Broad viscosity range**
  methanol, water, solvents, adhesives, grease, gel
- **Low pulsation delivery, low shear stress**
  rotary micro annular gear technology
- **Long service life**
  wear-resistant tungsten carbide
- **Precision motor and sophisticated control**
  DC-servomotor with integrated microcontroller

The micro annular gear pump mzr-4605 covers the flow rate range 0.012-72 ml/min. To the main assets of the device belong high precision, low pulsation, low volume dosage even of non-lubricating liquids or at high pressures, compact design and an integrated microcontroller. The pump allows dosage in a broad viscosity range and shows small, economic dimensions. The mzr-4605 targets applications in industrial production and process technology. The pump has been designed for continuous delivery and discrete dosage of water, watery solutions, solvents, methanol, oil, lubricants, adhesives, inks and paints as well as other high viscosity liquids.

## Applications

- Chemical processing
- Industrial and plant engineering
- Packaging
- Medical and pharmaceutical industry
- Mini plant technology
- Spray technology
- Dispensing of adhesives
- Ink and paint dosage
- Vacuum applications

Even if single parameters are within the indicated performance range of technical data, certain parameter combinations may not be achievable. Single parameters may exceed their indicated performance range under adequate circumstances. For detailed evaluation please contact HNP Mikrosysteme. Actual performance may vary. Specifications are subject to change without notice.

## Technical data

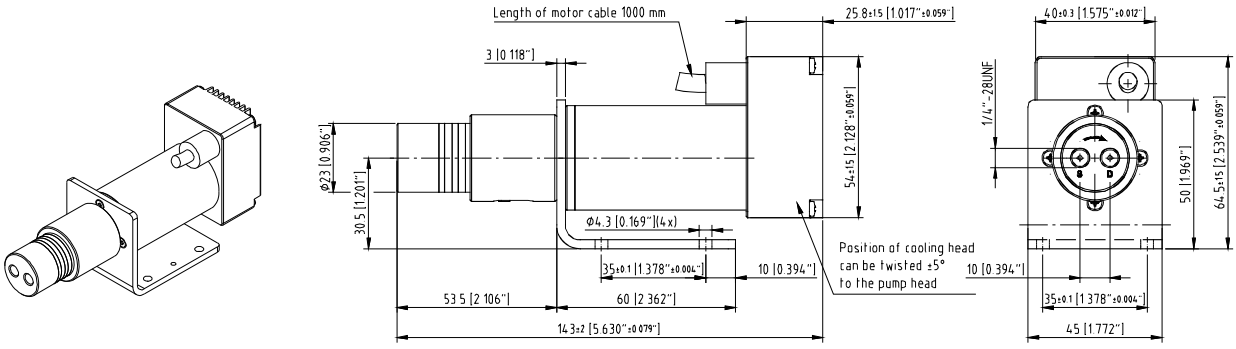
| | |
|---|---|
| Flow rate | 0.012 – 72 ml/min |
| Smallest dosage volume | 2 µl |
| Displacement volume | 12 µl |
| Differential pressure range | 0–10 bar (145 psi) for water, 0–50 bar (725 psi) for oil |
| Max. inlet pressure | 5 bar (73 psi); 10 bar * (145 psi *) |
| Liquid temperature range | -5 … +60 °C (-20 … +150 °C *) |
| Viscosity range | 0.3 – 50,000 mPas |
| Dosage precision | < 1 % Coefficient of Variation CV |
| Pulsation | < 6 % |
| Speed range | 1 – 6000 rpm |
| Fluid connection | 1/4"–28 UNF, frontal;<br>optional: inlet 1/8" NPT internal thread, lateral |
| Wetted parts | stainless steel 316L (1.4404, 1.4435), tungsten carbide Ni-based; shaft seal: graphite-reinforced PTFE, 316L static seals: FPM, optional: EPDM, FFPM |
| Motor | DC-servomotor, 24 V DC, 44 W |
| Controller | integrated 16-bit microcontroller |
| Interface | 0–10 V, RS-232, 1 digital input/output |
| Dimensions (L x W x H) | 143 x 45 x 65 mm |
| Weight | approx. 800 g |

Customized solutions on request.

* with optional fluidic seal module, heat insulation module, heating module

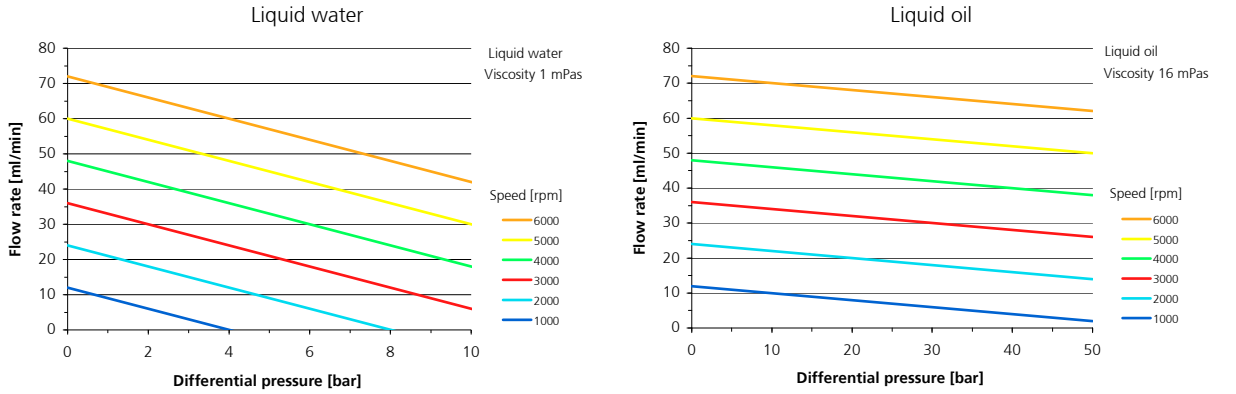
**Contact**
HNP Mikrosysteme GmbH
Bleicherufer 25 · D-19053 Schwerin
phone +49 385 52190-301
fax +49 385 52190-333
e-mail info@hnp-mikrosysteme.de
http://www.hnp-mikrosysteme.de

## Dimensions

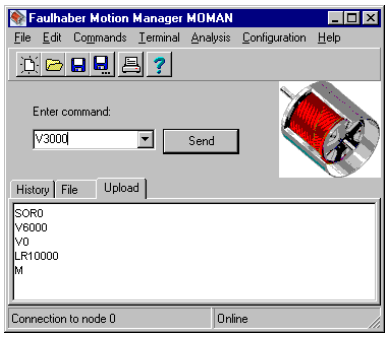



Subject to technical changes.

## Flow charts




## Control and software




- speed and position control for continuous and discrete dispensing tasks
- terminal box S-G05 with potentiometer for speed control
- power supply with DIN 45323 socket or screw terminal
- RS-232 9-pole SUB-D connector for direct connection to a PC or a SPC
- analog input 0-10 V, 0 (4)-20 mA with screw terminal
- EEPROM program memory
- temperature and current limiting
- simple ASCII command language for the parameter setting (velocity profiles) and programming of the motor
- programming with Windows® software »Motion Manager«
- online dynamic drive analysis
- simultaneous operation of up to 255 pumps with additional multiplexer modules

## Item number

| | |
|---|---|
| 10 02 01 05 | pump mzr-4605, inlet and outlet 1/4"–28 UNF, frontal;<br>terminal box S-G05, null-modem cable and software »Motion Manager« |
| 10 02 01 06 | pump mzr-4605 S/F, inlet 1/8" NPT, lateral; outlet 1/4"–28 UNF, frontal;<br>terminal box S-G05, null-modem cable and software »Motion Manager« |

## Accessories

| | |
|---|---|
| *Liquid supply accessories* | threaded fluid connectors, tubes, filters etc. |
| *Fluidic seal module* | use with liquids sensitive to air or water or for vacuum applications |
| *Heat insulation module* | use for increased liquid temperature of up to 150 °C |
| *Heating module* | active heating of the pump head up to 150 °C operating temperature |
| *Reduction gear* | gear 3.7:1 reduces speed for the metering of high viscosity liquids |
| *Console drive module* | diecast aluminum chassis mzr-S05 with control elements and display |
| *Multiplexer module* | simultaneous operation of up to 255 pumps with a single RS-232 interface |



08/16