

High performance series

## Micro annular gear pump mzr<sup>®</sup>-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
- **Pulseless 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, pulseless, 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

### 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)
Operating temperature range	-5 ... +60 °C (-20 ... +150 °C *)
Viscosity range	0.3 – 50,000 mPas
Precision	< 1 % Coefficient of Variation CV
Pulsation	< 6 %
Speed range	1 – 6000 rpm
Fluid connection	1/4"–28 UNF, frontal; 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
Measurements (L x B x H)	143 x 45 x 65 mm
Weight	approx. 800 g

Customized solutions on request. \* with optional heat insulation module, heating module

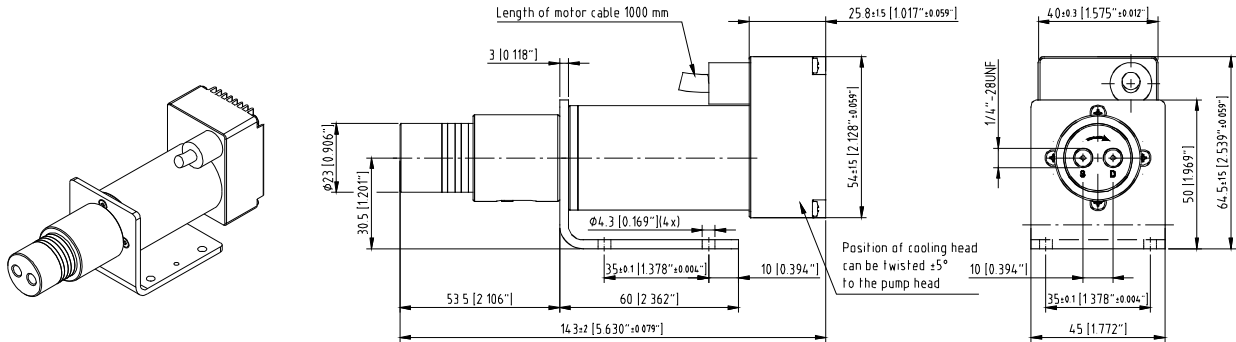
### Contact

HNP Mikrosysteme GmbH  
Juri-Gagarin-Ring 4 · D-19370 Parchim

phone +49| 3871| 451-301  
fax +49| 3871| 451-333

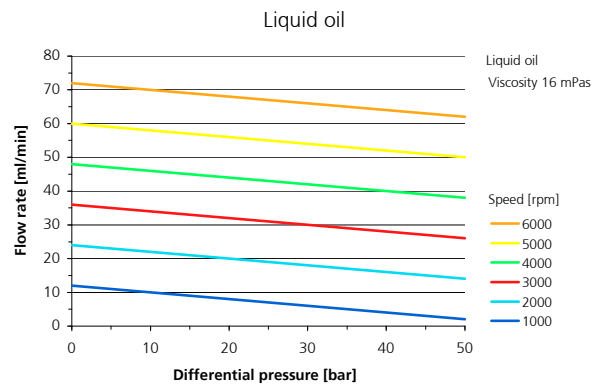
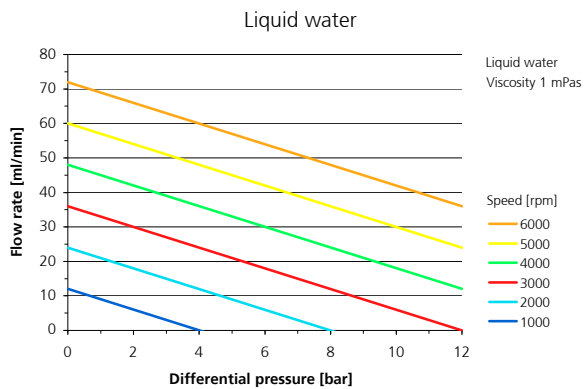
e-mail [info@hnp-mikrosysteme.de](mailto:info@hnp-mikrosysteme.de)  
<http://www.hnp-mikrosysteme.de>

## Measurements

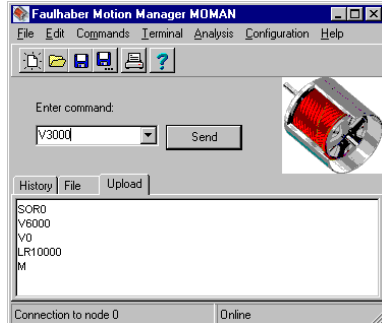


Subject to technical changes.

## 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 mzs-4605, inlet and outlet 1/4"–28 UNF, frontal;

10 02 01 06

terminal box S-G05, null-modem cable and software »Motion Manager«  
pump mzs-4605 S/F, inlet 1/8" NPT, lateral; outlet 1/4"–28 UNF, frontal;  
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 mzs-S05 with control elements and display

Multiplexer module

simultaneous operation of up to 255 pumps with a single RS-232 interface

Micro annular gear pumps (and housings) are protected by assigned patents: DE 198 43 161 C2, EP 1115979 B1, US 6,520,757 B1, EP 852674 B1, US 6,179,596 B1, EP 1354135, US 7,698,818 B2. Patents pending: EP 1807546, DE 10 2009 020 942.5-24, DE 10 2011 001 041.6. In the US, Europe and Japan additional patents are pending. mzs®, MoDoS®, µ-Clamp® are registered German trademarks of HNP Mikrosysteme GmbH.