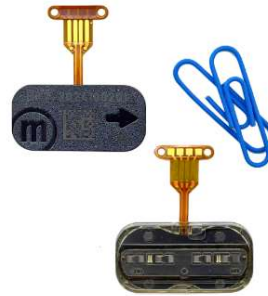


# 1 The Bartels Pump | BP7 – Mounting Datasheet

The BP7 Bartels pump is the next generation of piezoelectric diaphragm pump for microfluidic applications.

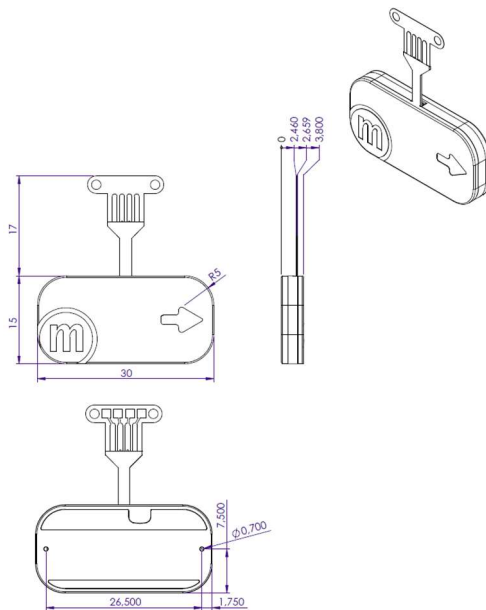
- Low maintenance
- Long life time
- Media separated (Liquids & Gases)
- Lightweight
- Small & compact package size
- Low noise level
- Fast response time
- Low power consumption
- Small internal volumes
- High Batch Production



Being able to pump liquids and gases allows the BP7 to be used in many applications in varying fields, including:

- POCT
- Air quality monitoring
- Liquid handling
- Pressure-driven Flow
- Gas & liquid analytics
- Liquid Dosing

The Bartels Pump series	
Pump type	piezoelectric diaphragm pump
Dimensions without connectors	30 x 15 x 3,8 mm 1.1811 x 0.5906 x 0.1498 in.
Typ. Dynamic Range Flow Rate (Water)	0 - 14000 µl/min <sup>1</sup>
Typ. Dynamic Range Pressure (Water)	0 - 500 mbar <sup>1</sup>
Typ. Dynamic Range Flow Rate (Air)	0 - 35000 µl/min <sup>1</sup>
Typ. Dynamic Range Pressure (Air)	0 - 140 mbar <sup>1,8</sup>
Operating temperature	0 - 70°C
Internal Volume	~ 30 µl
Weight	2 g
Burst pressure	1.5 bar
Life time	5000 h <sup>2</sup>
Power consumption	~ 50 mW <sup>2</sup>
IP code	IP33 <sup>4</sup>
Material in contact with media	Polyphenylsulfone (PPSU) <sup>5,6</sup>



1 Typical values can vary under application conditions. Content is subject to changes without notice.  
 2 Conditions: settings mp-labtronix: 100 Hz, 250 V, SRS  
 3 Conditions: air, room temperature 23°C, settings mp-labtronix: 300 Hz, 250 V, SRS, the max. volume flow will be reached after a few minutes of operation time.  
 4 Can be changed to IP44.  
 5 For media compatibility details please see section 3.9 in this document.  
 6 Other materials available on request  
 7 Recommended tubing: Tygon tubing 1.3 mm inner diameter.  
 8 0-150 mbar refers to mp6-gas+, mp6-liq meets at least 0-80 mbar, mp6-gas meets at least 0-100 mbar

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Follow Bartels:



## 2 Important Notices

This operating manual contains necessary instructions for the installation, commissioning, operation and maintenance of the mp6-series. The manual is intended to help you achieving optimal results in a short time and shall also assist avoiding possible sources of errors. The operating manual of the controllers and the accessories are available separately.

The products have been designed with state-of-the-art technology and in accordance with all relevant safety regulations. However, a risk of damage to the units, other property, the operator and/or other persons cannot be fully excluded.

Always ensure that specialized and trained personnel will comply with the following general instructions. Therefore, please keep this manual and hand out copies as required.

All values are approximate and no guarantee of specific technical properties. Changes in the course of technical progress are possible without notice.

### 2.1 Warranty

The mp6 micropumps have been developed for the transport of gases or liquids. The controllers have been developed for operating the mp6 micropumps. Bartels Mikrotechnik can assume no liability for damages resulting from the pump media. This applies especially for hazardous fluids.

The mp6 micropumps must be operated with Bartels Mikrotechnik electronics. Bartels Mikrotechnik GmbH cannot guarantee the proper work of the units with customer specific electronics. If other controllers than the ones from Bartels Mikrotechnik are used, Bartels Mikrotechnik disclaims any warranty.

Bartels Mikrotechnik assumes no liability for abnormal handling, improper or negligent use of the mp6 micropumps and the controller that is not conform to the specified purpose of the system. This applies especially for micropump controllers, components and systems of other manufacturers, which have not been certified by Bartels Mikrotechnik.

We guarantee that the mp6 micropumps comply with the actual state of scientific and technical knowledge and due to this, the operational risks are limited to a minimum.

Bartels Mikrotechnik GmbH warrants solely to the original purchaser of this product for a period of 12 months (one year) from the date of delivery that this product shall be of the quality, material and workmanship defined in Bartels Mikrotechnik GmbH published specifications of the product. Within such period, if proven to be defective, Bartels Mikrotechnik GmbH shall repair and/or replace this product, in Bartels Mikrotechnik GmbH's discretion, free of charge to the Buyer, provided that:

- notice in writing describing the defects shall be given to Bartels Mikrotechnik GmbH within fourteen (14) days after their appearance
- such defects shall be found, to Bartels Mikrotechnik GmbH's reasonable satisfaction, to have arisen from Bartels Mikrotechnik GmbH's faulty design, material or workmanship
- the defective product shall be returned to Bartels Mikrotechnik's factory at the Buyer's expense
- the warranty period for any repaired or replaced product shall be limited to the unexpired portion of the original period.

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This warranty does not apply to any equipment which has not been installed and used within the specifications recommended by Bartels Mikrotechnik GmbH for the intended and proper use of the equipment.

EXCEPT FOR THE WARRANTIES EXPRESSLY SET FORTH HEREIN, Bartels Mikrotechnik GmbH MAKES NO WARRANTIES, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THE PRODUCT. ANY AND ALL WARRANTIES, INCLUDING WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSLY EXCLUDED AND DECLINED. Bartels Mikrotechnik GmbH is only liable for defects of this product arising under the conditions of operation provided for in the data sheet and proper use of the goods. Bartels Mikrotechnik GmbH explicitly disclaims all warranties, express or implied, for any period during which the goods are operated or stored not in accordance with the technical specifications. Bartels Mikrotechnik GmbH does not assume any liability arising out of any application or use of any product or circuit and specifically disclaims any and all liability, including without limitation consequential or incidental damages. All operating parameters, including without limitation recommended parameters, must be validated for each customer's applications by customer's technical experts. Recommended parameters can and do vary in different applications. Bartels Mikrotechnik GmbH reserves the right, without further notice, (i) to change the product specifications and/or the information in this document and (ii) to improve reliability, functions and design of this product.

## 2.2 Warning, Personal Injury

Bartels Mikrotechnik GmbH rejects any responsibility for damages to persons or property resulting from non-compliance with the instructions in this manual. In this case all warranties shall be void.

Do not use this product as safety or emergency stop devices or in any other application where failure of the product could result in personal injury. Do not use this product for applications other than its intended and authorized use. Before installing, handling, using or servicing this product, please consult the data sheet and application notes. Failure to comply with these instructions could result in death or serious injury. If the Buyer shall purchase or use Bartels Mikrotechnik GmbH products for any unintended or unauthorized application, Buyer shall defend, indemnify and hold harmless Bartels Mikrotechnik GmbH and its officers, employees, subsidiaries, affiliates and distributors against all claims, costs, damages and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if Bartels Mikrotechnik GmbH shall be allegedly negligent with respect to the design or the manufacture of the product.

Moreover, please note that components of the controller and pump are operating with high voltage. Therefore, persons wearing pacemakers are recommended to avoid the operating system. Do not open the housing of the micropump and the controllers.

The use of liquids, which may alone or in combination create explosive or otherwise health-endangering conditions (including vapors) is not permitted.

All work in connection with the installation, assembly, commissioning/decommissioning, disassembly, operation, servicing, cleaning and repairing of the pump and the controller must be carried out by qualified, suitably trained and instructed personnel. Work on electrical components and assemblies must be carried out by supervised personnel with the necessary qualifications and skills, after verifying that the components do not lead residual voltage or charge and in a dry environment.

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We guarantee that the micropumps comply with the actual state of scientific and technical knowledge and due to this, the operational risks are limited to a minimum.

ESD Precautions: The inherent design of the active electronic components, i.e. mp-Lowdriver, -Highdriver, -Highdriver4, Valvedriver and -Labtronix causes it to be sensitive to electrostatic discharge (ESD). To prevent ESD-induced damage and/or degradation, take customary and statutory ESD precautions when handling this product.

## 2.3 Declaration of conformity

Bartels Mikrotechnik GmbH declares that the products are compliant to the RoHS directive 2011/65/EU. The controllers comply with the requirements of EMV 2014/30/EU and CE markings have been affixed to the devices. Additionally, the controllers are also compliant to the EU Low Voltage Directive 2014/35/EU.

## 3 Company information



Bartels Mikrotechnik is a globally active manufacturer and development service provider in the field of microfluidics. In the microEngineering division, the company supports industrial customers in the modification, adaptation and new development of high-performance and market-oriented product solutions through the innovative means of microsystems technology. The second division, microComponents, produces and distributes microfluidic products and systems, especially for miniaturized and portable applications. Our key products are micropumps that convey smallest quantities of gases or liquids and are used in a variety of ways in biotechnology, pharmaceuticals, medical technology and numerous other applications.

Bartels Mikrotechnik with passion for microfluidics!

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