

Bartels Micropumps

Micropumps transporting the tiniest amounts of gases or liquids can be considered the heart of microfluidics.

In many sectors they have become indispensable. Dosing lubricants, feeding sensors with sample gas or mixing starch into the steam of flat irons are only a few of the manifold tasks they can fulfill. Many further fields of application for example are located in medical technologies and analytics.

Extremely small in size and low in weight, with good particle tolerance and temperature resistance, Bartels micropumps are well prepared to be used in any of these sectors. As they are almost completely made of plastics, large quantities of these pumps can be produced at low cost and so may well be used as disposables.

The functional principle of the Bartels micropumps is based on a piezoelectric diaphragm in combination with passive check valves. A piezo ceramic mounted on a coated brass membrane is deformed when voltage is applied. By the resulting down stroke, the medium is being displaced out of the pump chamber below. The check valves on both sides of the pump chamber define the flow direction. When the voltage decreases, the corresponding piezo deformation causes an upstroke of the membrane. The medium is sucked in and the chamber is filled again. In every second, the pump can do several hundreds of such pumping cycles. The pumping performance can be influenced by adjustment of the parameters.

Important advantages for all users result from the radically simple pump design: Injection molded parts for housing and pump chamber, piezo actuators and passive valves constitute the key components. Thus any adaptation to specific requirements concerning flow rate or back pressure is easy to realize. This customization of micropumps with the appropriate electronic controllers is part of the services offered by Bartels microComponents. If requested, the pumps can be fully integrated into complex system designs as well.

Once the perfect pump for your application has been found, you may purchase an exclusive production license for this version to include the component into your own production processes. Of course Bartels microComponents can also realize a high quality serial production for you at low cost.

mp6 Micropump Series (mp6-hyb, mp6-gas, mp6-pi and mp6-pp)

The Bartels micropump mp6-series combines two piezo actuators inside a single housing. This pump version joins the established functional principle and central advantages of its parent generation mp5 with its own specific innovative features. The small power pack can handle twice the back pressure the mp5 can cope with, has an increased priming capability and is of higher bubble tolerance, so that even gas-liquid-mixtures can be pumped without issues. Its low power consumption is a further advantage. In the entire pump (mp6-hyb, mp6-gas) only one material comes into contact with the medium, all parts in medium contact are made of polyphenylsulfone (PPSU). The mp6-pi has its valve foil made of polyimide (PI) and the remaining wetted components made out of polyphenylsulfone (PPSU). The mp6-pp has its valve foil made out of polyimide (PI) and the remaining wetted components made out of polypropylene (PP).

The mp6-hyb, mp6-gas and mp6-pi can already be offered at low prices for large quantities due to an automated assembly. The mp6-pp is produced half-automated but can be transferred into automated serial production for large quantities.



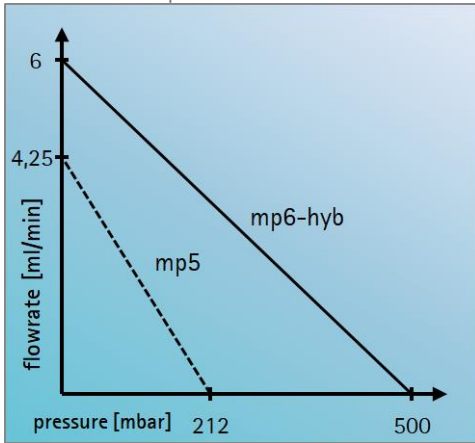
mp5 Micropump

The mp5 from Bartels microComponents is the smallest and lightest micropump available. Since 2004 the mp5 has successfully shown the potential of piezo membrane pumps. Due to the limited bubble tolerance and higher price in medium quantities, it is now replaced by its successor, the mp6, in many applications. If size is a challenging factor, then the mp5 is still the right choice.

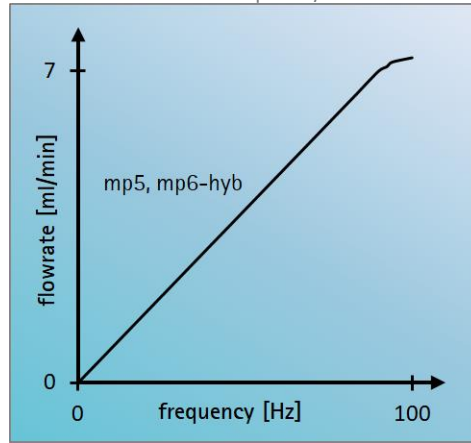
Its low power consumption and tiny size makes the mp5 the perfect pump to be fully integrated into your product's design. Test the mp5 now and ask about the possibilities of a customer specific adaptation - for your individual micropump.

Typical characteristics of the Bartels micropumps:

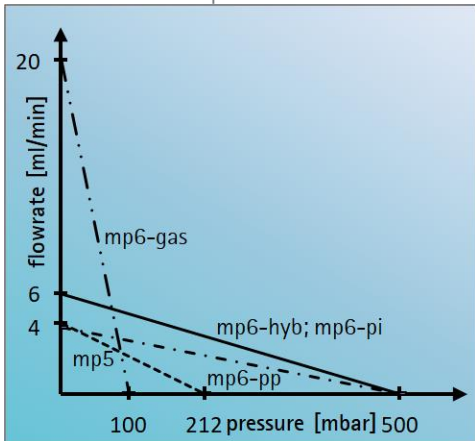
volume flow vs pressure



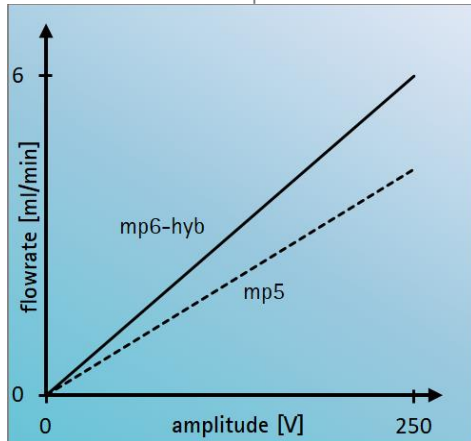
volume flow versus frequency



volume flow versus pressure



volume flow versus amplitude



The micropump mp6-pi does have the same performance behavior as the micropump mp6-hyb.

Content

Bartels Micropumps..... 1

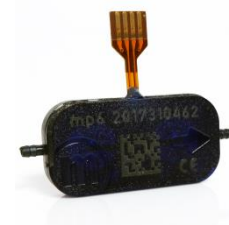
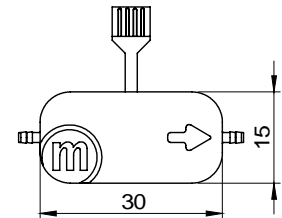


Technical Data of the mp6-hyb ¹	4
Technical Data of the mp6-pi ¹	5
Technical Data of the mp6-pp ¹	7
Technical Data of the mp6-gas ¹	8
Technical Data of the mp5 ¹	9
Electronic units for Bartels Micropumps.....	10
mp-x controller.....	10
mp6-OEM controller.....	10
mp6-EVA evaluation board	11
mp6-QuadEVA evaluation board	11
mp6-QuadOEM	12
pump driver for four pumps	12
mp6-QuadKEY evaluation board.....	12
Accessories for Bartels Micropumps.....	13
mp6-con connection cable.....	13
mp6-mol connector.....	13
mp-cv check valve	13
mp-t tubing.....	13
mp-t tubing.....	14
mp-y tubing connector.....	14
mp-filter.....	14
mp-hc	14
Evaluation-Sets.....	15
mp5-go! Set.....	15



Technical Data of the mp6-hyb¹

mp6-hyb	Order code: mp6-hyb
Pump type	piezoelectric diaphragm pump
Number of actuators	2
Dimensions without connectors	30 x 15 x 3,8 mm 1.1811 x 0.5906 x 0.1498 in.
Weight	2 g
Fluidic connectors	barbed tube clip, (outer diameter 1.9 mm, length 3.5 mm) ²
Electric connector	flex connector 1.25 mm pitch
Power consumption	~ 50 mW ⁶
Self-priming	yes ³
Pumping media	Liquids and gases
Operating temperature	0–70°C
Life time	5000 h ⁶
IP code	IP33 ⁷
Material in contact with media	polyphenylsulfone (PPSU) ⁸
Suitable pump driver	mp-x, mp6-EVA, mp6-OEM, mp6-QuadEVA, mp6-QuadOEM and mp6-QuadKEY
Typical values of flow and back pressure for selected media (values measured with mp-x: 100 Hz, 250 V, SRS):	
Liquids – water	
min. volume flow \dot{v} ($p=0$)	6 ml/min ⁴
min. back pressure p ($\dot{v}=0$)	500 mbar ⁴
Gases – air	
min. volume flow \dot{v} ($p=0$)	12 ml/min ⁵
min. back pressure p ($\dot{v}=0$)	80 mbar ⁵



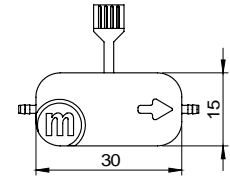
- ¹ Typical values. Values can vary under application conditions. Content is subject to changes without notice.
- ² Recommended tubing: Tygon tubing 1.3 mm inner diameter.
- ³ Conditions: Suction pressure > 10 mbar, DI water, settings mp-x: 100 Hz, 250 V, SRS, the max. volume flow will be reached after a few minutes of operation time.
- ⁴ Conditions: DI water (25°C), room temperature 23°C, settings mp-x: 100 Hz, 250 V, SRS
- ⁵ Conditions: air, room temperature 23°C, mp-x: 300 Hz, 250 V, SRS
- ⁶ Conditions: settings mp-x: 100 Hz, 250 V, SRS
- ⁷ Can be changed to IP44.
- ⁸ For media compatibility details please find more information in the corresponding media compability sheets.

Please find more information concerning the controller and the equipment in the corresponding manuals.



Technical Data of the mp6-liq^{1, 2}

mp6-liq	Order code: mp6-liq
Pump type	piezoelectric diaphragm pump
Number of actuators	2
Dimensions without connectors	30 x 15 x 3,8 mm 1.1811 x 0.5906 x 0.1498 in.
Weight	2 g
Fluidic connectors	barbed tube clip, (outer diameter 1.9 mm, length 3.5 mm) ³
Electric connector	flex connector 1.25 mm pitch
Power consumption	~ 50 mW ⁶
Self-priming	yes ⁴
Pumping media	Liquids and mixtures
Operating temperature	0–70°C
Life time	5000 h ⁶
IP code	IP33 ⁷
Material in contact with media	polyphenylsulfone (PPSU) ⁸
Suitable pump driver	mp-x, mp6-EVA, mp6-OEM, mp6-QuadEVA, mp6-QuadOEM and mp6-QuadKEY
Typical values of flow and back pressure for selected media (values measured with mp-x: 200 Hz, 250 V, SRS):	
Liquids – water	
min. volume flow \dot{v} (p=0)	12 ml/min ⁵
min. back pressure p ($\dot{v}=0$)	800 mbar ⁵



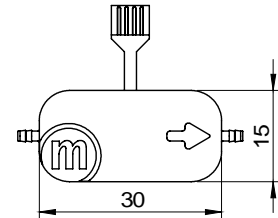
- 1 Typical values. Values can vary under application conditions. Content is subject to changes without notice.
- 2 Preliminary values, changes will occur on series production
- 3 Recommended tubing: Tygon tubing 1.3 mm inner diameter.
- 4 Conditions: Suction pressure > 10 mbar, DI water, settings mp-x: 100–200 Hz, 250 V, SRS, the max. volume flow will be reached after a few minutes of operation time.
- 5 Conditions: DI water (25°C), room temperature 23°C, settings mp-x: 200 Hz, 250 V, SRS
- 6 Conditions: settings mp-x: 200 Hz, 250 V, SRS
- 7 Can be changed to IP44.
- 8 For media compatibility details please find more information in the corresponding media compability sheets.

Please find more information concerning the controller and the equipment in the corresponding manuals.



Technical Data of the mp6-pi¹

mp6-pi	Order code: mp6-pi
Pump type	piezoelectric diaphragm pump
Number of actuators	2
Dimensions without connectors	30 x 15 x 3,8 mm 1.1811 x 0.5906 x 0.1498 in.
Weight	2 g
Fluidic connectors	barbed tube clip, (outer diameter 1.9 mm, length 3.5 mm) ²
Electric connector	flex connector 1.25 mm pitch
Power consumption	~ 50 mW ⁵
Self-priming	yes ³
Pumping media	Liquids and mixtures
Operating temperature	0–70°C
Life time	5000 h ⁵
IP code	IP33 ⁶
Material in contact with media	Polyimide foil (PI), polyphenylsulfone (PPSU) ⁷
Suitable pump driver	mp-x, mp6-EVA, mp6-OEM, mp6-QuadEVA, mp6-QuadOEM and mp6-QuadKEY
Typical values of flow and back pressure for selected media (values measured with mp-x: 100 Hz, 250 V, SRS):	
Liquids – water	
min. volume flow \dot{v} ($p=0$)	6 ml/min ⁴
min. back pressure p ($\dot{v}=0$)	500 mbar ⁴



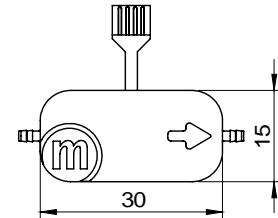
- ¹ Typical values. Values can vary under application conditions. Content is subject to changes without notice.
- ² Recommended tubing: Tygon tubing 1.3 mm inner diameter.
- ³ Conditions: Suction pressure > 10 mbar, DI water, settings mp-x: 100 Hz, 250 V, SRS, the max. volume flow will be reached after a few minutes of operation time.
- ⁴ Conditions: DI water (25°C), room temperature 23°C, settings mp-x: 100 Hz, 250 V, SRS
- ⁵ Conditions: settings mp-x: 100 Hz, 250 V, SRS
- ⁶ Can be changed to IP44.
- ⁷ For media compatibility details please find more information in the corresponding media compatibility sheets.

Please find more information concerning the controller and the equipment in the corresponding manuals.



Technical Data of the mp6-pp¹

mp6-pp	Order code: mp6-pp
Pump type	piezoelectric diaphragm pump
Number of actuators	2
Dimensions without connectors	30 x 15 x 3,8 mm 1.1811 x 0.5906 x 0.1498 in.
Weight	2 g
Fluidic connectors	barbed tube clip, (outer diameter MIN 1.77 mm - MAX 1.85 mm, length 3.5 mm) ²
Electric connector	flex connector 1.25 mm pitch
Power consumption	~ 50 mW ⁴
Self-priming	yes ³
Pumping media	Liquids and mixtures
Operating temperature	0 – 70°C
Life time	5000 h ⁴
IP code	IP33 ⁵
Material in contact with media	polypropylene (PP) ⁷
Suitable pump driver	mp-x, mp6-EVA, mp6-OEM, mp6-QuadEVA, mp6-QuadOEM and mp6-QuadKEY
Typical values of flow and back pressure for selected media (values measured with mp-x: 100 Hz, 250 V, SRS):	
Liquids – water	
min. volume flow \dot{v} ($p=0$)	4 ml/min ⁶
min. back pressure p ($\dot{v}=0$)	500 mbar ⁶



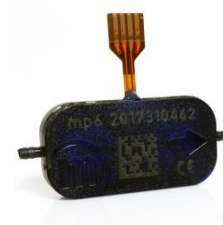
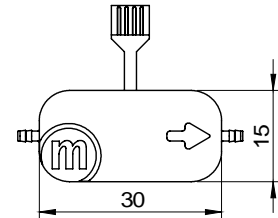
- ¹ Typical values. Values can vary under application conditions. Content is subject to changes without notice.
- ² Recommended tubing: Tygon tubing 1.02 mm inner diameter. MIN & MAX values due to injection molding shrink.
- ³ Conditions: Suction pressure > 10 mbar, DI water, settings mp-x: 100 Hz, 250 V, SRS, the max. volume flow will be reached after a few minutes of operation time.
- ⁴ Conditions: Settings mp-x: 100 Hz, 250 V, SRS signal
- ⁵ Can be changed to IP44.
- ⁶ Conditions: DI water (25°C), room temperature 23°C, settings mp-x: 100 Hz, 250 V, SRS
- ⁷ For media compatibility details please find more information in the corresponding media compatibility sheets.

Please find more information concerning the controller and the equipment in the corresponding manuals.



Technical Data of the mp6-gas¹

mp6-gas	Order code: mp6-gas
Pump type	piezoelectric diaphragm pump
Number of actuators	2
Dimensions without connectors	30 x 15 x 3,8 mm 1.1811 x 0.5906 x 0.1498 in.
Weight	2 g
Fluidic connectors	barbed tube clip, (outer diameter 1.9 mm, length 3.5 mm) ²
Electric connector	flex connector 1.25 mm pitch
Power consumption	~ 150 mW ⁵
Self-priming	yes ³
Pumping media	gases
Operating temperature	0–70°C
Life time	5000 h ⁵
IP code	IP33 ⁶
Material in contact with media	polyphenylene sulphone (PPSU) ⁷
Suitable pump driver	mp-x, mp6-EVA, mp6-OEM, mp6-QuadEVA, mp6-QuadOEM and mp6-QuadKEY
Typical values of flow and back pressure for selected media (values measured with mp-x: 300 Hz, 250 V, SRS):	
Gases	
min. volume flow \dot{v} ($p=0$)	20 ml/min (300 Hz) ⁵
min. back pressure p ($\dot{v}=0$)	100 mbar (300 Hz) ^{5, 8}



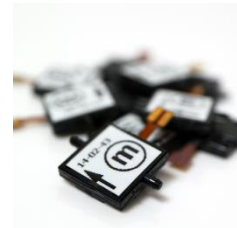
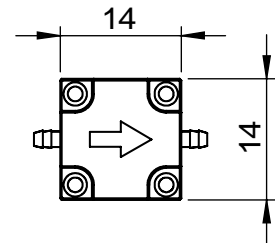
- ¹ Typical values. Values can vary under application conditions. Content is subject to changes without notice.
- ² Recommended tubing: Tygon tubing 1.3 mm inner diameter.
- ³ Conditions: air, room temperature 23°C, settings mp-x: 300 Hz, 250 V, SRS, the max. volume flow will be reached after a few minutes of operation time.
- ⁴ Conditions: gases, room temperature 23°C, mp-x: 300 Hz, 250 V, SRS
- ⁵ Conditions: settings mp-x: 300 Hz, 250 V, SRS
- ⁶ Can be changed to IP44.
- ⁷ For media compatibility details please find more information in the corresponding media compatibility sheets.
- ⁸ The mp6-gas is available as mp6-gas+ version with 150 mbar of back pressure.

Please find more information concerning the controller and the equipment in the corresponding manuals.



Technical Data of the mp5¹

mp5	Order code: mp5
Pump type	piezoelectric diaphragm pump
Number of actuators	1
Dimensions without connectors	14 x 14 x 3,5 mm 0.5512 x 0.5512 x 0.1378 in.
Weight	0,8 g
Fluidic connectors	barbed tube clip (outer diameter 2 mm, length 3 mm) ²
Electric connector	flex connector / phone jack
Power consumption	< 25 mW ³
Self-priming	no
Pumping media	fluids or gases
Operating temperature	0–70°C
Life time	5000 h ³
IP code	IP44
Material in contact with media	polyphenylsulphone (PPSU), polyimide (PI), nitrile butadiene rubber (NBR) ⁵
Suitable pump driver	mp-x, mp6-EVA und mp6-OEM
Typical values of flow and back pressure for selected media (values measured with mp-x: 250 V, SRS):	
Liquids – water	
min. volume flow \dot{v} ($p=0$)	4,25 ml/min (100 Hz) ³
min. back pressure p ($\dot{v}=0$)	212 mbar (100 Hz) ³



- ¹ Typical values. Values can vary under application conditions. Content is subject to changes without notice.
² Recommended tubing: Tygon tubing 1.3 mm inner diameter.
³ Conditions: DI water (25°C), room temperature (23°C), settings mp-x: 100 Hz, 250 V, SRS
⁴ Conditions: Gases, room temperature (23°C), mp-x: 300 Hz, 250 V, SRS
⁵ For media compatibility details please find more information in the corresponding media compatibility sheets.

Please find more information concerning the controller and the equipment in the corresponding manuals.



Electronic units for Bartels Micropumps

mp-x controller	Order code: mp-x
Access to the full range of driving parameters. A system for the professional evaluation of the micropumps.	
Dimensions	7,5 x 16 x 20 cm 2.983 x 6.299 x 7.874 in.
Weight	ca. 800 g
Pumping media	liquids, gases
min. volume flow (SRS, 250 V)	mp6-hyb: ≥ 6 ml/min (100 Hz, DI-water) mp6-pi: ≥ 6 ml/min (100 Hz, DI-water) mp6-pp: ≥ 4 ml/min (100 Hz, DI-water) mp6-gas: ≥ 20 ml/min (300 Hz, air) mp5: ≥ 4,25 ml/min (100 Hz, DI-water)
Adjustable parameters	amplitude, frequency, signal form
Amplitude range	0 – 250 V
Frequency range	0 – 300 Hz
Signal form	SRS, rectangular, sine
Power supply	mains adaptor
Current consumption	750 mA at 7,5 V
USB-Port	one
connectable micropumps	mp5: 1x-2x or mp6-hyb, mp6-pi, mp6-pp, mp6-gas: 1x with mp6-con



mp-x

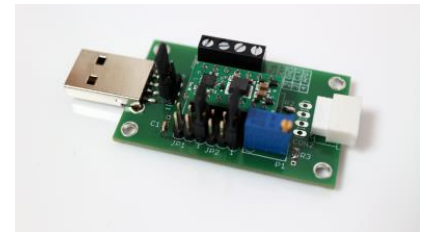
mp6-OEM controller	Order code: mp6-OEM
The OEM-controller drives the micropump at adjustable performance in a package similar to an integrated circuit. It enables integration into system electronics or on a PCB.	
Dimensions	10,5 x 20,5 x 6 mm 0.4134 x 0.8070 x 0.2362 in.
Pumping media	liquids, gases
Max. volume flow (DI-water)	4,9 ml/min @ 3 VDC supply; 100 Hz 7 ml/min @ 5 VDC supply; 100 Hz
Adjustable parameters	amplitude, frequency
Amplitude range	85 – 250 Vpp ¹
Frequency range	25 – 226 Hz (Frequencies up to 1000 Hz are possible; please note that the amplitude will decrease in that case. Frequencies down to 1 Hz are possible with an external clock generator.)
Signal form	similar to rectangular
Power supply	2.5 – 5.5 VDC (5 V recommended for optimized performance)
Current consumption	ca. 30 mA at 5 V
Pin arrangement	DIL 14; horizontal ~2.54 mm, vertical ~7.62 mm
¹ amplitude range can go up to 270 Vpp but guaranteed is 250 Vpp	



mp6-OEM



mp6-EVA evaluation board	Order code: mp6-EVA
<p>The evaluation board enables the simple use of the micropump based on the mp6 OEM controller. Next to preset standard parameters (235 Vpp, 100 Hz) the mp6 EVA also allows adjusting the pump parameters flexibly, partially by external tuning. For the supply voltage of the module can be provided via USB (no data interface), just attach it to a USB power supply and start the evaluation. Alternatively it can also be supplied by a 2.5 – 5 V voltage source. Optional housing available separately on request (Strapubox 2043)</p>	
Dimensions	6,5 x 3 x 2 cm 2.5590 x 1.1811 x 0.7874 in.
Pumping media	liquids, gases
Max. volume flow (mp6-hyb, DI-Water)	4,9 ml/min @ 3 VDC supply; 100 Hz 7 ml/min @ 5 VDC supply; 100 Hz
Adjustable parameters	Amplitude, frequency
Amplitude range	85 – 250 Vpp ¹
Frequency range	25 - 226 Hz (Frequencies up to 1000 Hz are possible; please note that the amplitude will decrease in that case. Frequencies down to 1 Hz are possible with an external clock generator.)
Signal form	similar to rectangular
Power supply	via USB or 2.5 V – 5.5 VDC
Current consumption	ca. 30 mA at 5 V
¹ amplitude range can go up to 270 Vpp but guaranteed is 250 Vpp	



mp6-EVA

mp6-QuadEVA evaluation board	Order code: mp6-QuadEVA
<p>The mp6-QuadEVA is an evaluation board that allows controlling up to four mp6 micropumps simultaneously with one setting and up to a frequency of 800 Hz.</p> <p>It is possible to change pump voltage and pump frequency directly with the rotary control elements at the board or via USB. Simple control software is provided with the board. Also any terminal software can be used to remotely control frequency and amplitude or enable/disable each of the four pumps.</p>	
Dimensions	80 x 60 x 16 mm 3.15 x 2.36 x 0.63 in.
Pumping media	liquids, gases
Max. volume flow (mp6 gas, gas: air)	each single mp6-gas: ~42 ml/min @ 260 V; 800 Hz
Adjustable parameters	amplitude, frequency
Amplitude range	0 – 260 Vpp
Frequency range	50 - 800 Hz
Signal form	sine
Power supply	7.5 V, 1000 mA
Current consumption	avg. 220 mA, peak 280 mA ¹
¹ four connected mp6-gas @ 260 V and 800 Hz	



mp6-QuadEVA



mp6-QuadOEM pump driver for four pumps	Order code: mp6-QuadOEM
<p>The mp6-QuadOEM is a pump driver that allows driving up to four mp6 micropumps simultaneously. It comes in a package similar to an integrated circuit that enables integration into system electronics or on a PCB. The driving frequency, amplitude and also the driving signal is adjustable. Sine signal and rectangle are available amongst others. Every pump can be activated and deactivated individually. This driver is configured and controlled through an I²C interface.</p>	
Dimensions	38 x 18 x 12 mm 1.50 x 0.71 x 0.47 in.
Pumping media	liquids, gases
Max. volume flow (mp6-gas, gas: air)	each single mp6-gas: ~42 ml/min @ 260 V; 800 Hz
Adjustable parameters	amplitude, frequency, signal shape
Amplitude range	0 – 260 Vpp
Frequency range	50 – 800 Hz
Signal form	sine, rectangular, other
Interface	I ² C
Power supply	2.7 – 5 VDC
Current consumption	avg. 220 mA, peak 280 mA ¹
Pin arrangement	DIL28; horizontal 2.54 mm, vertical 15.24 mm
¹ four connected mp6-gas @ 260 V and 800 Hz	



mp6-QuadOEM

mp6-QuadKEY evaluation board	Order code: mp6-QuadKEY
<p>The mp6-QuadKEY is an evaluation board that allows controlling the mp6 QuadOEM through an Arduino Nano or pin compatible microcontroller.</p> <p>Up to four mp6 micropumps can be directly connected to the board. An external power supply terminal is available, but the board can also be powered through the microcontroller USB port. All of the microcontroller port pins are exposed for easy access (to connect external hardware). The mp6-QuadKEY comes with a demo software and source code.</p>	
Dimensions	92 x 46 x 23 mm 3.62 x 1.81 x 0.91 in.
Pumping media	liquids, gases
Max. volume flow (mp6-gas, gas: air)	each single mp6-gas: ~42 ml/min @ 260 V; 800 Hz
Adjustable parameters	amplitude, frequency, signal shape
Amplitude range	0 – 260 Vpp
Frequency range	50 – 800 Hz
Signal form	sine, rectangular, other
Interface	USB
Power supply	7.5 – 12 V, 500 mA
Current consumption	avg. 240 mA, peak 300 mA ¹
¹ four connected mp6-gas @ 260 V and 800 Hz	



mp6-QuadKEY



Accessories for Bartels Micropumps

mp6-con connection cable	Order code: mp6-con
Connector for mp6-series to mp-x	
Design and connectors	<ul style="list-style-type: none"> - Molex FCC 1.25 mm pitch - 85 cm (33.465 in.) cable - Binder 620 connector



mp6-con

mp6-mol connector	Order code: mp6-mol
Connector to micropump mp6-series for custom made cabling	
Type	Molex FCC 39532045 1.25 mm pitch
Contacts	4
Entry Angle/Orientation	Vertical
PC Tail Length	3.50 mm
Operating temperature	-20°C – 80°C
Voltage	max. 200V
Current	max. 1.0 A per contact
Termination Interface: Style	Through Hole



mp6-mol

mp-cv check valve	Order code: mp-cv
The passive check valve eliminates the back flow of the pumping medium, when the micro-pump is switched off. It can be connected via tubing.	
Dimensions	21 mm x 5.5 mm (length x wrench size) 0.82677 x 0.2165 in.
Materials in contact with the pumped media	Silicone, stainless steel
Fluidic connectors	barbed tube clip, length : 5.6 mm for tubing with internal diameter: 1.3 mm
Cracking pressure	typical < 35 mbar
Max. back pressure	500 mbar
Typical leak rate	<20 µl/h for DI-water (at 500 mbar)



mp-cv

mp-t tubing	Order code: mp-t ID 1.3 mm
Inlet/outlet compatible Tygon® tubing.	
Inner diameter	1.3 mm
Outer diameter	3 mm
Wall thickness	0.85 mm
Sterilizable	Yes (autoclave or ethylene oxide)
Color	transparent
Suitable micropumps	1 m
Suitable micropumps	mp5, mp6-hyb, mp6-gas, mp6-pi



mp-t



mp-t tubing	Order code: mp-t ID 1.02 mm
Inlet/outlet compatible Tygon® tubing.	
Inner diameter	1.02 mm
Outer diameter	2,74 mm
Wall thickness	0.86 mm
Sterilizable	Yes (autoclave or ethylene oxide)
Color	transparent
Packaging unit	1 m
Suitable micropumps	mp6-pp



mp-t

mp-y tubing connector	Order code: mp-y
Y-connector for tubing, for the parallel use of two micropumps:	
Material	polypropylene (PP)
for tubing inner diameters of	1,3 – 2,6 mm 0.0512 – 0.1024 in.



mp-y

mp-filter	Order code: mp-filter
Protection of fluidic systems from particles.	
Dimensions	21 mm x 5.5 mm 0.82677 in. x 0.2165 in.
Fluidic connectors	barbed tube clip, length : 5.6 mm for tubing with internal diameter: 1.3 mm
Filter porosity	20 – 60 µm



mp-f

mp-hc	Order code: mp-hc
Hose clip to prevent leakage in high pressure applications.	
Inner diameter (when closed)	3 mm
Dimensions	In closed state: 4 mm x 5,1 mm Width (in tube direction): 2 mm
Suitable tube	tygon hose 1.3 mm connected with barbed tube clip



mp-hc



Evaluation-Sets

mp5-go! Set	Order code: mp5-go! Set
The evaluation of the mp5 can be started directly with this set. It contains:	
3 micropumps mp5	
1 mp-x controller	
1 USB cable & power supply	
1 meter mp-t ID1.3 tubing	
1 bag of mp-hc hoseclips	



mp5-go! Set

mp6-go! Set	Order code depending on the micropump chosen	
	mp6-hyb-go! Set	fluids and gases
	mp6-pi-go! Set	pi-compatible fluids; self-priming
	mp6-pp-go! Set	pp-compatible fluids; self-priming
	mp6-gas-go! Set	gases; fluid-insentient
The evaluation of pumps of the mp6-series can be started directly with this set. It contains:		
3 micropumps of the mp6 series (Please specify. Only one pump type per set.)		
1 mp-x controller		
1 USB cable & power supply		
1 mp6-con		
1 meter mp-t ID1.3 tubing		
1 bag of mp-hc hoseclips		



mp6-go! Set

mp6-basic Set	Order code depending on the micropump chosen	
	mp6-hyb-basic Set	fluids and gases
	mp6-pi-basic Set	pi-compatible fluids; self-priming
	mp6-pp-basic Set	pp-compatible fluids; self-priming
	mp6-gas-basic Set	gases; fluid-insentient
The evaluation of pumps of the mp6-series can be started directly with this set. It contains:		
3 micropumps of the mp6 series (Please specify. Only one pump type per set.)		
1 mp6-EVA evaluation board		
1 meter mp-t ID1.3 tubing		
1 bag of mp-hc hoseclips		



mp6-basic Set

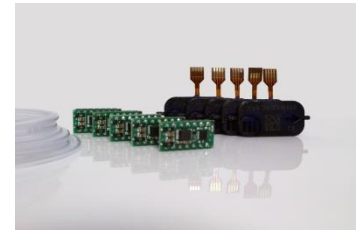


mp6-pro Set	Order code depending on the micropump chosen	
	mp6-hyb-pro Set	fluids and gases
	mp6-pi-pro Set	pi-compatible fluids; self-priming
	mp6-pp-pro Set	pp-compatible fluids; self-priming
	mp6-gas-pro Set	gases; fluid-insentient

The evaluation of pumps of the mp6-series can be started directly on the customer's circuit board with this set.

It contains:

5 micropumps of the mp6 series (Please specify. Only one pump type per set.)
5 mp6-OEM controller
5 pieces mp6-mol
1 meter mp-t ID1.3 tubing
1 bag of mp-hc hoseclips



mp6-pro Set

mp6-QuadEVA Set	Order code depending on the micropump chosen	
	mp6-hyb-QuadEVA Set	fluids and gases
	mp6-pi-QuadEVA Set	pi-compatible fluids; self-priming
	mp6-pp-QuadEVA Set	pp-compatible fluids; self-priming
	mp6-gas-QuadEVA Set	gases; fluid-insentient

The evaluation of the pumps of mp6-series can be started directly with this set.

It contains:

4 micropumps of the mp6 series (Please specify. Only one pump type per set.)
1 mp6-QuadEVA board
1 mini-USB-cable & power supply
1 meter mp-t ID1.3 tubing
1 bag of mp-hc hoseclips



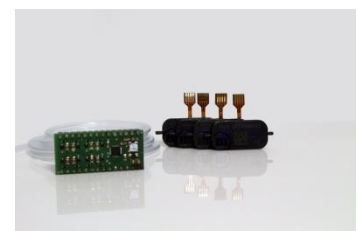
mp6-QuadEVA Set

mp6-QuadOEM Set	Order code depending on the micropump chosen	
	mp6-hyb-QuadOEM Set	fluids and gases
	mp6-pi-QuadOEM Set	pi-compatible fluids; self-priming
	mp6-pp-QuadOEM Set	pp-compatible fluids; self-priming
	mp6-gas-QuadOEM Set	gases; fluid-insentient

The evaluation of the pumps of the mp6-series can be started directly with this set.

It contains:

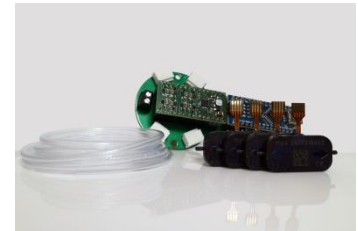
4 micropumps of the mp6 series (Please specify. Only one pump type per set.)
1 mp6-QuadOEM board
4 pieces mp6-mol
1 meter mp-t ID1.3 tubing
1 bag of mp-hc hoseclips



mp6-QuadOEM Set



mp6-QuadKEY Set	Order code depending on the micropump chosen	
	mp6-hyb-QuadKEY Set	fluids and gases
	mp6-pi-QuadKEY Set	pi-compatible fluids; self-priming
	mp6-pp-QuadKEY Set	pp-compatible fluids; self-priming
	mp6-gas-QuadKEY Set	gases; fluid-insentient
The evaluation of the pumps of the mp6-series can be started directly with this set. It contains:		
4 micropumps mp6		
1 mp6-QuadKEY board (incl. 1 mp6-QuadOEM, 1 microcontroller board)		
1 mini-USB-cable		
1 meter mp-t ID1.3 tubing		
1 bag of mp-hc hoseclips		



mp6-QuadKEY Set

The offered accessories and kits are meant to assist your evaluation process. After the feasibility of the micropump in the customer specific application has been proven, an adequate miniaturization of the controller and the equipment can be carried out.

The design of customized controllers is part of the services offered by Bartels microEngineering.

Please contact us, so that we can support you in choosing the suitable equipment.

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