

M Series Liquid Handling Pumps

- Continuous, bidirectional flow
- Four basic models:
 - M6: 5 nl/min to 5 ml/min at 100 psi
 - M6HP: 5 nl/min to 5 ml/min up to 1500 psi
 - M50: 1 µl/min to 25 ml/min at 100 psi
 - M50HP: 1 µl/min to 25 ml/min up to 500 psi
- USB and RS-422/485 control
- Available with aluminum or stainless body



Description

The Cheminert® M Series liquid handling pump is a syringe-free pump capable of delivering a bidirectional flow to six orders of magnitude. It is a positive displacement pump, which means that it is self-priming and tolerant of any gas which may find its way into the fluid lines. Since there is no separate fill cycle, the pump can be operated continuously, and volumetric capacity is limited only by time. (*Note: High speed continuous flow will reduce the pump lifetime.*)

All are offered with an advanced aluminum body that dramatically reduces the weight of the pump body (by up to 40%) and improves heat dissipation.

USB and RS-422/485 communication protocols are incorporated into the microprocessor-driven controller. (USB interface requires an adapter.)

The pump comes complete with MSLHS software, which employs standard liquid handling terminology and an integrated valve control package in a familiar Windows format for everyday lab usage.

Operating Principle

The mechanics of the pump are surprisingly simple. The core of the pump is a rotor housing four pistons. As the microstepper motor turns the rotor, the pistons float on a stationary cam. At any given moment, one piston is filling, one is dispensing, and the other two are in transit between the fill and dispense positions.

Applications

The M Series pump is recommended for any liquid handling applications requiring accuracy and precision. It is particularly suited for applications with a wide range of volumes (which entail laborious syringe changes with other pumps) and for applications which benefit from the versatility provided when the pump is coupled with the optional multiposition reagent selection valve. Typical applications include:

- Calibration source for mass spectroscopy
- Flow-based electrochemical systems
- Flow cytometry, cell and drug perfusion
- HTS and robotic systems
- Infusion and micro-dialysis
- LC applications – micro flow, micro gradients
- Mass spectroscopy sample introduction
- Micro diluters/dispensers for nl to ml range applications
- Micro liquid transfers for micro arrays
- Microtiter plate dispensing using multiposition valves
- Post-HPLC column reagent addition, stop flow, peak collection
- Precision dispensers and sampling devices (such as autosamplers)
- Sample introduction systems for ICP nebulizers

Specifications

Power requirement		All Models							
Rest current draw		50 mA							
Operational current draw		Typical 750 mA (RMS)							
Voltage		Typical 24 VDC, input voltage 12 - 48 VDC							
Communications (COM1 or COM2)									
Type		RS-422/485							
Baud rate		Default 9600 bps, Full range 4.8 - 115.2 kbps							
Parity		None							
Data bits per character		8							
Stop bits		1							
Error checking		None							
Mode		ASCII							
Environmental									
Operating Temperature		0 - 50°C							
Operating Humidity		< 90% non-condensing							
Storage Temperature		-20°C - 70°C (dry)							
Motor									
Type		2 Phase Bipolar (1.8° per step)							
Planetary Gear Assembly		M6		M6HP		M50		M50HP	
Ratio		4.75:1		4.75:1		9.86:1		9.86:1	
Physical Specifications		Al version	SS version	Al version	SS version	Al version	SS version	Al version	SS version
Weight	Pump	300 g	520 g	355 g	575 g	320 g	540 g	365 g	590 g
	Motor and gear assy.	570 g	570 g	570 g	570 g	660 g	660 g	660 g	660 g
	MForce controller	80 g	80 g	80 g	80 g	80 g	80 g	80 g	80 g
	Power supply	512 g	512 g	512 g	512 g	512 g	512 g	512 g	512 g
Resolution		MSEL=256		MSEL=256		MSEL=256		MSEL=256	
Minimum flow		5 nL/min		5 nL/min		1 µL/min		1 µL/min	
Maximum continuous flow		5 mL/min		5 mL/min		25 mL/min		25 mL/min	
Maximum intermittent flow*		10 mL/min		10 mL/min		35 mL/min		35 mL/min	
Maximum back pressure		100 psi		Up to 1500 psi		100 psi		Up to 500 psi	
Volume accuracy (%error)		< ±0.5%		< ±0.5%		< ±0.5%		< ±0.5%	
Volume precision (%CV)		<0.1% at 1.25 mL <0.5% at 125 µL		<0.1% at 1.25 mL <0.5% at 125 µL		<0.1% at 8 mL <0.5% at 800 µL		<0.1% at 8 mL <0.5% at 800 µL	
Fittings		1/16" Valco detail (10-32)		1/16" Valco detail (10-32)		1/8" Cheminert (1/4-28)		1/8" Cheminert (1/4-28)	
Fluid contact		PTFE, Sapphire, PEEK, Viton®, and Valcon P		PTFE, Ceramic, PEEK		PTFE, Ceramic, Valcon H2		PTFE, Ceramic, XPTFE	

* High speed continuous flow or the use of chemicals incompatible with the wetted surfaces will reduce pump lifetime.

Ordering Information

For best service, please call to discuss your application before placing your order.

Model M6	5 nl to 5 ml, <100 psi	Aluminum body	Stainless steel body
	Pump with controller and stepper motor	CP2A-4841-F1	CP2-4841-F1
Model M6HP	5 nl to 5 ml, <1500 psi	Aluminum body	Stainless steel body
	Pump with controller and stepper motor	CP2A-4141-F1HP	CP2-4141-F1HP
Model M50	100 nl to 25 ml, <100 psi	Aluminum body	Stainless steel body
	Pump with controller and stepper motor	CP3A-8182-F2	CP3-8182-F2
Model M50HP	100 nl to 25 ml, <500 psi	Aluminum body	Stainless steel body
	Pump with controller and stepper motor	CP3A-8112-F2HP	CP3-8112-F2HP



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