



MP-12

Model No.	MP-12
Max. Pressure (MPa)	20MPa
Flow Rate Range	0.1~20.0 $\mu$ L/min
Plunger Diameter	$\phi$ 3.2mm
Plunger Stroke	15.5mm
Flow Volume Per Stroke	124 $\mu$ L
Flow Volume Accuracy	$\pm$ 0.5%
Special Functions	Flow Volume Calibration, Dispensing Mode, Constant Pressure Flow Mode
Pressure Display Accuracy	$\pm$ 5%
Wetted Materials	PEEK, S.Steel, Sapphire, PTFE
Remote Input/Output	RS232C / Digital Input: Pump ON/OFF, Digital Output: Error
Dimensions/Weight (mm)	220(H) x 170(W) x 350(D), 13.0kg

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\* Maximum discharge pressure (Mpa) is a maximum instantaneous pressure and does not mean a constant maximum discharge pressure at the time of maximum flow rate.

\* Contact us for special orders other than the specifications mentioned above.

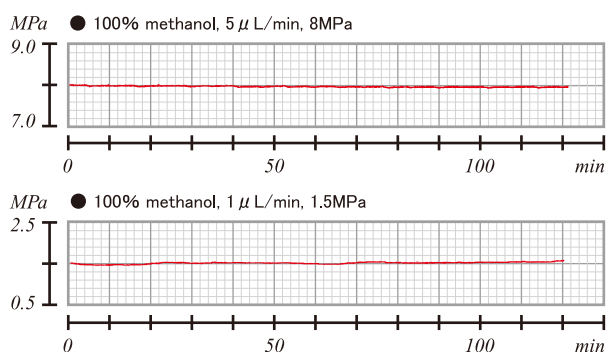
## MICRO PUMP MP-12

Regulated by two automatic valves and independent plunger mechanism, MP-12 offers the most stable micro flow with zero pulsation.

### FEATURES

- The minimum flow rate of 100nL/min
- Absolutely zero pulsation
- Flow pressure sensor for real-time pressure monitoring
- Pressure limiter for column protection
- Special functions: stable pressure flow and dosing
- RS232C terminal for computer control
- Built-in micro volume degasser included

### Flow Pulsation Data (MP-12)



Intelligent Pump AI-12

Model No.	AI-12-01	AI-12-13	AI-12-33
Max. Pressure (MPa)	20(PEEK) / 30(S.Steel)	20(PEEK) / 30(S.Steel)	5
Flow Rate Range	0.001~0.999mL/min	0.01~9.99mL/min	0.1~50mL/min
Flow Volume Per Stroke	4 $\mu$ l	32 $\mu$ l	154 $\mu$ l
Flow Volume Accuracy	$\pm$ 0.3%		
Special Functions	Active Pulse Reduction, Flow Volume Calibration		
Pressure Display Accuracy	$\pm$ 5%		
Wetted Materials	S.Steel or PEEK, Sapphire, Ruby, PTFE, PCTFE		
Remote Input/Output	Input: PUMP ON/OFF Output: Error		
Communication Port	RS232C		
Dimensions (mm)	144(H) x 79(W) x 285(D)		
Weight	5.0kg	4.5kg	5.0kg

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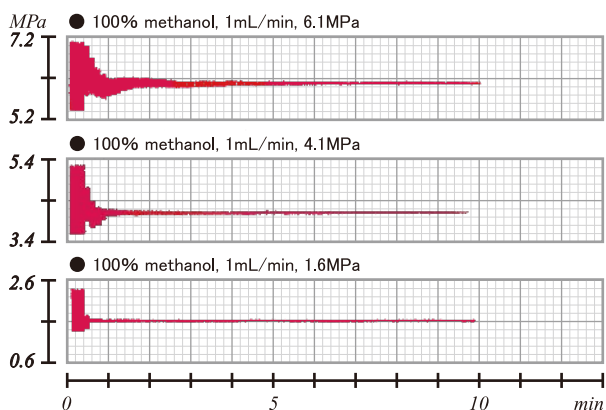
## INTELLIGENT PUMP AI-12 series

Equipped with the latest pulse reduction technology, these pump models deliver excellent flow stability and low pulsation you need for today's HPLC applications.

### FEATURES

- Compact design
- Active pulse reduction minimizes pulsation to insignificance
- Flow pressure sensor for flow monitoring
- Pressure limit for column protection
- Non-metallic PEEK pump available
- RS232C terminal for computer control
- Three pump models available for micro, analytical and preparative applications

### Pressure Pulsation Data





KP-12-13

## DUAL PUMP KP-12 series

Designed for standard HPLC applications, KP-12 offers pressure monitoring, dosing mode, stable pressure flow and pressure limit for column protection.

### FEATURES

- Compact design
- Flow pressure sensor for pressure monitoring
- Pressure limiter for column protection
- Dosing mode
- Non-metal PEEK pump available
- Communication terminal for remote pump operation
- Three pump models available for micro, analytical and preparative applications.

Model No.	KP-12-01	KP-12-13	KP-12-33
Max. Pressure (MPa)	20(PEEK) / 25(S.Steel)	20(PEEK) / 25(S.Steel)	5
Flow Rate Range	0.001~1.00mL/min	0.01~10.00mL/min	0.1~50.0mL/min
Flow Volume Per Stroke	4 $\mu$ l	32 $\mu$ l	154 $\mu$ l
Flow Volume Accuracy	$\pm 0.3\%$		
Special Functions	Flow Volume Calibration, Dispensing Mode, Flow Pressure Calibration, Constant Pressure Flow		
Pressure Display Accuracy	$\pm 5\%$		
Wetted Materials	S.Steel or PEEK, Sapphire, Ruby, PTFE, PCTFE		
Remote Input/Output	Input: PUMP ON/OFF, Flow Volume (BCD) (4~20mA analogue input optional)		Output: Error
Communication Port	N/A		
Dimensions (mm)	144(H) x 79(W) x 285(D)		
Weight	Appr. 3.5kg		

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KP-11-13

## DUAL PUMP KP-11 series

The most economical dual plunger pump available, suitable for many standard HPLC applications.

### FEATURES

- Compact design
- Non-metal PEEK pump available
- Communication terminal for remote pump operation
- Three pump models available for micro, analytical and preparative applications

Model No.	KP-11-01	KP-11-13	KP-11-33
Max. Pressure (MPa)	20(PEEK) / 25(S.Steel)	20(PEEK) / 25(S.Steel)	5
Flow Rate Range	0.001~1.00mL/min	0.01~10.00mL/min	0.1~50.0mL/min
Flow Volume Per Stroke	4 $\mu$ l	32 $\mu$ l	154 $\mu$ l
Flow Volume Accuracy	$\pm 0.3\%$		
Special Functions	Flow Volume Calibration, Dispensing Mode		
Pressure Display Accuracy	N/A		
Wetted Materials	S.Steel or PEEK, Sapphire, Ruby, PTFE, PCTFE		
Remote Input/Output	Input: PUMP ON/OFF, Flow Rate (BCD) (4~20mA analogue input optional)		Output: Error
Communication Port	N/A		
Dimensions (mm)	144(H) x 79(W) x 285(D)		
Weight	Appr. 3.4kg		

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SP-12-13

## PCS PUMP SP-12 series

Single plunger pumps with latest technology. Delivers reliable performance for simple solvent flow operation.

### FEATURES

- Compact design
- Quick plunger return for shorter flow interruption
- Flow pressure sensor for real-time pressure monitoring
- Pressure limiter for column protection
- Dosing mode
- Non-metal PEEK pump available
- Three pump models available for micro, analytical and preparative applications

Model No.	SP-12-M	SP-12-12	SP-12-13	SP-12-32	SP-12-33
Max. Pressure (MPa)	20MPa	20MPa	10MPa	5MPa	2MPa
Flow Rate Range	0.01~1.00mL/min	0.01~2.00mL/min	0.1~5.00mL/min	0.1~10.0mL/min	0.1~20.0mL/min
Plunger Diameter	φ 2	φ 3. 2		φ 7	
Plunger Stroke	2mm	2mm	4mm	2mm	4mm
Flow Volume Per Stroke	8 μ l	16 μ l	32 μ l	77 μ l	154 μ l
Flow Volume Accuracy	±0.5%				
Special Functions	Flow Volume Calibration, Flow Pressure Calibration, Flow Pressure Limit, Pulse Reduction Mode, Dispensing Mode (0.01 or 0.1-1000mL)				
Wetted Materials	S.Steel or PEEK, Sapphire, Ruby, PTFE, PCTFE				
Remote Input/Output	Input: PUMP ON/OFF, Flow Volume (BCD) (4-20mA analogue input optional) Output: Error				
Dimensions (mm)	144(H) x 79(W) x 285(D)				
Weight	Appr. 3.0kg				

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SP-11-13 (PEEK)

## PCS PUMP SP-11 series

These pumps deliver reliable performance offered at the best price.

### FEATURES

- Compact design
- Quick plunger return for shorter flow interruption
- Pressure limiter for column protection
- Dosing mode
- Non-metal PEEK pump available
- Three pump models available for micro, analytical and preparative applications

Model No.	SP-11-M	SP-11-12	SP-11-13	SP-11-32	SP-11-33
Max. Pressure (MPa)	20MPa	20MPa	10MPa	5MPa	2MPa
Flow Rate Range	0.01~1.00mL/min	0.01~2.00mL/min	0.1~5.00mL/min	0.1~10.0mL/min	0.1~20.0mL/min
Plunger Diameter	φ 2	φ 3. 2		φ 7	
Plunger Stroke	2mm	2mm	4mm	2mm	4mm
Flow Volume Per Stroke	8 μ l	16 μ l	32 μ l	77 μ l	154 μ l
Flow Volume Accuracy	±0.5%				
Special Functions	Pulse Reduction Mode, Dispensing Mode (0.01 or 0.1-1000mL)				
Wetted Materials	S.Steel or PEEK, Sapphire, Ruby, PTFE, PCTFE				
Remote Input/Output	Input: PUMP ON/OFF, Flow Volume (BCD) (4-20mA analogue input optional) Output: Error				
Dimensions (mm)	144(H) x 79(W) x 285(D)				
Weight	Appr. 3.0kg				

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Dual Pump 214

## DUAL PUMP 214

Designed for high pressure and high flow rate, this pump is capable of the maximum flow rate of 50mL with maximum pressure of 10MPa (Max. pressure is 20MPa up to 25mL/min.).

### FEATURES

- Flow rate range of 0.1–50mL
- Maximum pressure of 20MPa up to 25mL and 10MPa up to 50mL
- Flow pressure sensor for pressure monitoring
- Pressure limiter for column protection
- RS232C terminal for computer control

Model No.	Dual Pump 214
Max. Pressure (MPa)	20MPa(0.1ml~25ml) / 10MPa(25ml~50ml)
Flow Rate Range	0.1~50.0mL/min
Flow Volume Per Stroke	154 $\mu$ l
Flow Volume Accuracy	$\pm$ 0.3%
Plunger Stroke	4mm
Pressure Display Accuracy	$\pm$ 5%
Wetted Materials	S.Steel, Sapphire, Ruby, PTFE, PCTFE
Remote Input/Output	Input : Pump on/off    Output : Error
Communication Port	RS232C
Dimensions (mm)	180(H) x 90(W) x 315(D)
Weight	8.0kg

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WP-11

## CLEANING PUMP WP-11

A miniature pump for back-flushing plungers. Connectable to all FLOM pumps. Recommended for the use of buffer solution.

### FEATURES

- Miniature design
- Diaphragm pump

Model No.	WP-11
Flow Rate Range	0.4mL/min
Dimensions (mm)	72(H) x 50(W) x 120(D)
Weight	0.49kg
Power Consumption	AC100V

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