

PSNE4002X Microfluidics syringe pump

Also available as:

- PSNE4002XD – Continuous infusion microfluidics double syringe pump system
- PSNE4502X – OEM Microfluidics double syringe pump



PSNE4002X Features:

Advance per step: 4.185268 nanometers

Smooth pumping at ultra-low flow rates. Accepts 2 syringes from the smallest size available up to 60 mL. The 140 mL syringes can be filled up to 120 mL. Pumping rate as low as 0.007nL/hr with a 0.5µL syringe or as high as 1226 µL/min with a 60 mL syringe. Includes the X upgrade smooth linear/gradient increasing and decreasing pumping feature.

The PSNE4000 family of syringe pumps features:

- Built for automation
- Operates stand-alone or from a computer
- Infuses and withdraws
- Applications range from simple infusions to complex pumping programs
- Programmable preset protocols
- Program up to 41 pumping phases: change pumping rates, set dispensing volumes, insert pauses, control and respond to external signals, sound the buzzer.
- RS-232 and TTL logic control interfaces

Two pumps connected with a dual cable create a Dual Pump System allowing for continuous infusion or emulsification. Network, control, and monitor up to 100 pumps with one computer. Worldwide power supplies available. Motor stall detection. Non-volatile memory of all parameters and programming. Upgradeable to the X and X2 advanced firmware versions for gradient pumping and increased program memory. Dispensing accuracy of +/-1%. Unlimited lifetime technical support. Two year warranty. Plus many, many more features!

Custom Applications

For specialized and OEM applications, contact us!

Custom modifications can be made to the mechanics and/or the firmware.

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Specifications

Mechanical & electrical

Syringe sizes:	Up to 60 mL (140 mL partially filled) 140 mL fully filled with long versions
Number of syringes:	1
Motor type:	Step motor
Motor steps per revolution:	400
Motor gearbox reduction	25:1
Micro-stepping:	1/16 to 1/2 depending on motor speed
Advance per step:	4.185267857 nm to 33.4821429 nm depending on motor speed
Motor to drive screw ratio:	15/28
Drive screw pitch:	20.32 revolutions/inch
DC connector:	2.1 mm, center positive
Voltage at DC connector:	12V DC at full load
Amperage:	750 mA at full load
Power supply type:	Unregulated linear external wall adapter, country and power source specific
Power supply output rating:	12V DC @ 1000 mA
Dimensions:	22.86 cm x 14.605 cm x 11.43 cm (Non-OEM)
Weight:	1.63 kg

Operational

Maximum speed	0.220934197 cm/min
Minimum speed	8.27653E-05 cm/hr
Maximum pumping rate	1226 µL/min with a B-D 60 mL syringe
Minimum pumping rate	14.36 nL/hr with a B-D 1 mL syringe
Maximum force	150 lbs. at minimum speed, 18 lbs. at maximum speed
Number of program phases	41
RS-232 pump network	100 pumps maximum
PS-232 selectable baud rates	300, 1200, 2400, 9600, 19200
Syringe inside diameter range:	0.100 to 50.00 mm

Syringe manufacturer	Syringe (µL)	Inside diameter (mm)	Maximum rate (µL/hr)	Minimum rate (nL/hr)
SGE (Gas tight)	5	0.343	12.24	0.077
	10	0.485	24.48	0.153
	25	0.728	55.17	0.345
	50	1.03	110.4	0.69
	100	1.457	221	1.38
Hamilton	0.5	0.103	1.104	0.007
	1	0.146	2.21	0.014
	2	0.206	4.418	0.028
	5	0.326	11.04	0.069

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Syringe manufacturer	Syringe (mL)	Inside diameter (mm)	Maximum rate ($\mu\text{L/hr}$)	Minimum rate (nL/hr)	Maximum rate ($\mu\text{L/min}$)
B-D	1	4.699	2298	14.36	38.31
	3	8.585	7673	47.91	127.8
	5	11.99	9999	93.45	249.4
	10	14.43	9999	135.4	361.3
	20	19.05	9999	236	629.7
	30	21.59	9999	303.1	808.8
	60	26.59	9999	459.6	1226
HSW Norm-Ject	1	4.69	2290	14.3	38.16
	3	9.65	9695	60.54	161.5
	5	12.45	9999	100.8	268.9
	10	15.9	9999	164.4	438.6
	20	20.05	9999	261.4	697.5
	30	22.9	9999	340.9	909.9
	50	29.2	9999	554.3	1479
Monoject	1	5.74	3430	21.42	57.17
	3	8.941	8322	51.97	138.7
	6	12.7	9999	104.9	279.8
	12	15.72	9999	160.7	428.8
	20	20.12	9999	263.2	702.4
	35	23.52	9999	359.6	959.9
	60	26.64	9999	461.4	1231
	140	38	9999	938.7	2505
Terumo	1	4.7	2299	14.36	38.33
	3	8.95	8339	52.07	138.9
	5	13	9999	109.9	293.2
	10	15.8	9999	162.3	433.1
	20	20.15	9999	264	704.5
	30	23.1	9999	346.9	925.9
	60	29.7	9999	573.4	1530
Poulsen & Graf (Glass)	1	6.7	4673	29.19	77.89
	2	8.91	8265	51.61	137.7
	3	9.06	8545	53.36	142.4
	5	11.75	9999	89.75	239.5
	10	14.67	9999	139.9	373.4
	20	19.62	9999	250.3	667.9
	30	22.69	9999	334.7	893.3
	50	26.96	9999	472.5	1261
Steel Syringes	1	9.538	9471	59.14	157.8
	3	9.538	9471	59.14	157.8
	5	12.7	9999	104.9	279.8
	8	9.538	9471	59.14	157.8
	20	19.13	9999	237.9	635
	50	28.6	9999	531.8	1419
SGE (Gas tight)	0.25	2.303	552	3.448	9.2
	0.5	3.257	1104	6.896	18.4
	1	4.606	2208	13.8	36.8
	2.5	7.284	5523	34.49	92.05
	5	10.3	9999	68.97	
	10	14.57	9999	138	
	25	23.03	9999	344.8	
	50	27.5	9999	491.6	
100	34.99	9999	795.9		

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