



AL-8000

Multi Programmable Syringe Pump



The **AL-8000** Programmable Syringe Pump is designed for automation. It can be operated in a stand alone fashion or from a computer. Applications range from simple infusion to complex pumping programs. You may program up to 41 pumping phases that include changing pumping rates, setting dispensing volumes, inserting pauses, controlling or responding to external signals, or sounding the buzzer.

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.

- Holds 2, 4, 6, or 8 syringes of up to 10cc each (Glass or stainless steel syringes larger than 20mL may require Anti-siphon Modification Kit.)
- Infusion rates from 0.568 μ L/hr (1cc syringe) to 380ml/hr (10 cc syringe)
- Easy-to-use keypad interface
- Higher flow rate models available
- Includes all the advanced functions and programming features
- Infuse/withdrawal
- Programmable preset protocols
- RS-232 and TTL logic control interfaces
- 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 $\pm 1\%$

SPECIFICATIONS

MECHANICAL & ELECTRICAL

Syringe sizes	Up to 10cc
Number of syringes.....	8
Motor type	Step motor
Motor steps per revolution	200
Microstepping	1/8 to 1/4 depending on motor speed
Advance per step.....	0.132291667 μ M to 0.26458333 μ M depending on motor speed
Motor to drive screw ratio.....	5/1
Drive screw pitch	24 revolutions/inch
Power supply.....	Wall adapter 12V DC @ 1000mA
DC connector.....	2.5mm, center positive
Power supply type	Unregulated linear external wall adapter
Dimensions.....	10.25"x15"x5" High (26x38.1x12.7cm)
Weight	10.125 lbs. (4.595kg)

OPERATIONAL

Maximum speed	3.4917cm/min.
Minimum speed	0.0026cm/hr.
Maximum pumping rate.....	1163mL/hr. with a B-D 60cc syringe
Minimum pumping rate.....	0.454 μ L/hr. with a B-D 1cc syringe
Force applied to all syringes.....	160 LBs at min. speed, 30 lbs at max. speed
Number of program phases.....	41
RS-232 pump network.....	100 pumps maximum
RS-232 selectable baud rate.....	300, 1200, 2400, 9600, 19200
Syringe inside diameter range.....	0.100-50.00mm

Example Flow Rates

Syringe Size	Max. Rate	Min. Rate
0.5 μ L	17.45 μ L/hr	0.001 μ L/hr
1 mL	36.19 mL/hr	0.452 μ L/hr
3 mL	153.2 mL/hr	1.914 μ L/hr
5 mL	255 mL/hr	3.185 μ L/hr
10 mL	415.9 mL/hr	5.195 μ L/hr

WORLD PRECISION INSTRUMENTS

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