

Syringe Pump

FNM syringe pumps are designed as a low-cost unit, capable of holding 2 or 10 syringes of any make from 10µl to 60ml. These syringe pumps are ideal for delivering accurate and precise amounts of fluids for

a multitude of syringe pump applications including electrospinning, infusing calibration into a mass spectrometer or reaction chamber, long term drug infusion to animals and general infusion applications.



Features:

- Bright Display and Easy-To-Use Interface
- Continuous flow of stream
- Injection capability in microliter (µl) scale
- Nonvolatile Memory
- Programmable (HPM and HSM series)
- Windows based Software (HSM series)
- Appropriate for high viscose substances (more than 5 bars: HSH series)
- Alarm as soon as the desired injection is completed (in HPM and HSM series)
- Dual pump is available (200 series)
- Autofill capability (HPM and HSM series); electric valve is optional
- Infuse/refuse capability (HPM and HSM series)

Software Description (windows platform)

The programming functions of HSM series provide powerful capabilities for advanced experiments. While in program mode, the pump could perform the following tasks at a predetermined time or when prompted by a signal from an external device:

- Start or stop pumping (injection)
- Change pumping (injection) direction (infuse-withdraw)
- Change flow rates
- Pump (Inject) a precise volume and stop
- Ramp up or down flow rates
- Inject in a desired formula

In the "Program" mode, the above-mentioned tasks could be linked together into powerful programs to simplify your automation projects. (commands are available)

SP Series	HOM	HPM	HSM	HSH
Internal Programming	-	✓	✓	✓
Computer Control	-	-	✓	✓
Autofill	-	✓	✓	✓
High Pressure	-	-	-	✓

Model	SP102	SP110	SP204	SP301
No. of Mechanical mechanism	1	1	2	1
Max. Syringe No.	2	10	2 + 2	1
Big Cylinder	-	-	-	✓

FNM Syringe Pump nomenclature:

SPXY ABC

X: 1: one Mechanical system, **2:** Two Mechanical system, **3:** one big mechanical system

YY: Max. Syringe lines. **(1, 2, 4 or 10)**

A: M: Medium precision **H:** High precision

B: O: not programmable; **P:** Internal programmable; **S:** Software and Internal programmable

C: M: Medium pressure **H:** High pressure

Example:

SP204 HSH → Syringe Pump, 2 motors, maximum 4 syringes, High precision, Software, High pressure

SP110 HPM → Syringe Pump, 1 motor, maximum 10 syringes, High precision, Programmable, Medium pressure

SP301 HSM → Syringe Pump, 1 motor, maximum 1 big syringe, High precision, Software, Medium pressure

Specifications:

Input Power: 100-240V AC, 50-60 Hz.

Number of Syringe: Up to 2 (SP102 series) / Up to 10 (SP110 series)

Display: 4 lines, 20 character LCD display

Nonvolatile Memory: Stores syringe inner diameter, rate, target volume, programs and settings

Syringe Type: Plastic, metal or glass

Minimum Flow Rate: 1 µl/hr using a 10µl syringe (barrel diameter: 1 mm)

Maximum Flow Rate: 5968 ml/hr using a 60 ml syringe (barrel diameter: 29 mm)

Pedal resolution per step: 10 nm

Linear Force (Max): 17 kg (in M series); 25 kg (in H series); measured at the 120 ml/hr injection rate

Drive Motor: 1.8° Stepper Motor

Motor Drive Control: Microprocessor with 1/128 micro stepping

Number of Micro steps per one rev. of Lead Screw: 25600

Step Resolution: 0.049 µm/µstep

Pusher Travel Rate: Minimum: 0.25 µm/min; Maximum: 152 mm/min

Connectors: USB (S Series)

Operating Temperature: 0 – 45 °C

Storage Temperature: 0 – 45 °C

Method of Operation: Continuous

Dimension: SP102: 24 × 26 × 20 cm, SP110: 24 × 34 × 20 cm, SP204: 30 × 30 × 22 cm

Weight: SP102: 4 kg, SP110: 5.8 kg, SP204: 9.2 kg

Warranty: 1 year

Typical Applications:

- Cell injection
- Controlled drug injection
- Electrospinning
- Controlled reactive injection into the reactor
- Lab on a chip

