

SPM+ HD/P111-O Programmable Syringe Pump

High Volume - DATASHEET



Environmental conditions

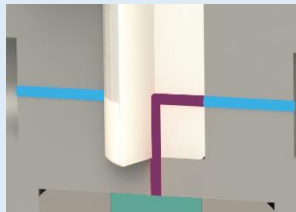
| | |
|-----------------------|------------------------|
| Operating temperature | 15-45°C (59-113°F) |
| Humidity | 20-80%, non-condensing |
| Max pressure | 7 bars (102 psi) |

Fluidic characteristics

| | |
|--------------------|--|
| Tube port fittings | Standard ¼-28 UNF, flat-bottom |
| Wetted materials | PTFE, PCTFE and borosilicate glass |
| Channel diameter | 0.5 mm (0.020 in) / 0.4-1 mm (0.015-0.039 in) available upon request |

Mechanical characteristics

COMPATIBLE VALVE MODELS

| Series | LOW CARRYOVER VOLUME |
|---------------------------------------|---|
| Liquid path |  |
| Number of channels inside rotary part | 1 |
| Number of ports | 6 – 8 – 10 – 12 |
| Channel diameter | 0.5, 1 mm |
| Internal volume (with syringe) | 10.8 – 25.7 µL |
| Carryover volume (with syringe) | 9.8 – 18.6 µL |

Glossary reminder

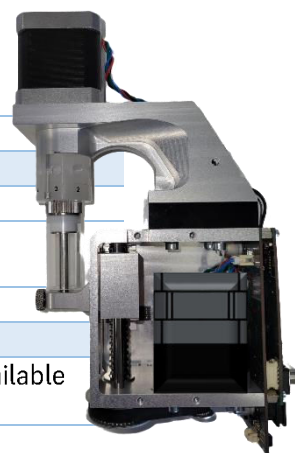
Internal volume: Volume inside the system, from entrance to exit (does not include the volume in the syringe)

Dead volume: Volume that is “stuck” in the system (dead end), which is not cleanly swept and relies on diffusion to clear out.

Carryover volume: Volume of liquid that will be mixed with the next liquid or sample. It is not stuck, but will be swept next time a liquid passes.

PLUNGER DETAILS

| | |
|-----------------------|---|
| Travel length | 30 mm with 1'296'000 micro-steps |
| Resolution | Selectable 3'000 steps or 24'000 steps |
| Drive | Screw drive with linear encoder for step loss detection |
| Plunger seal material | PTFE |
| Accuracy | ≤ 1.0 % at full stroke |



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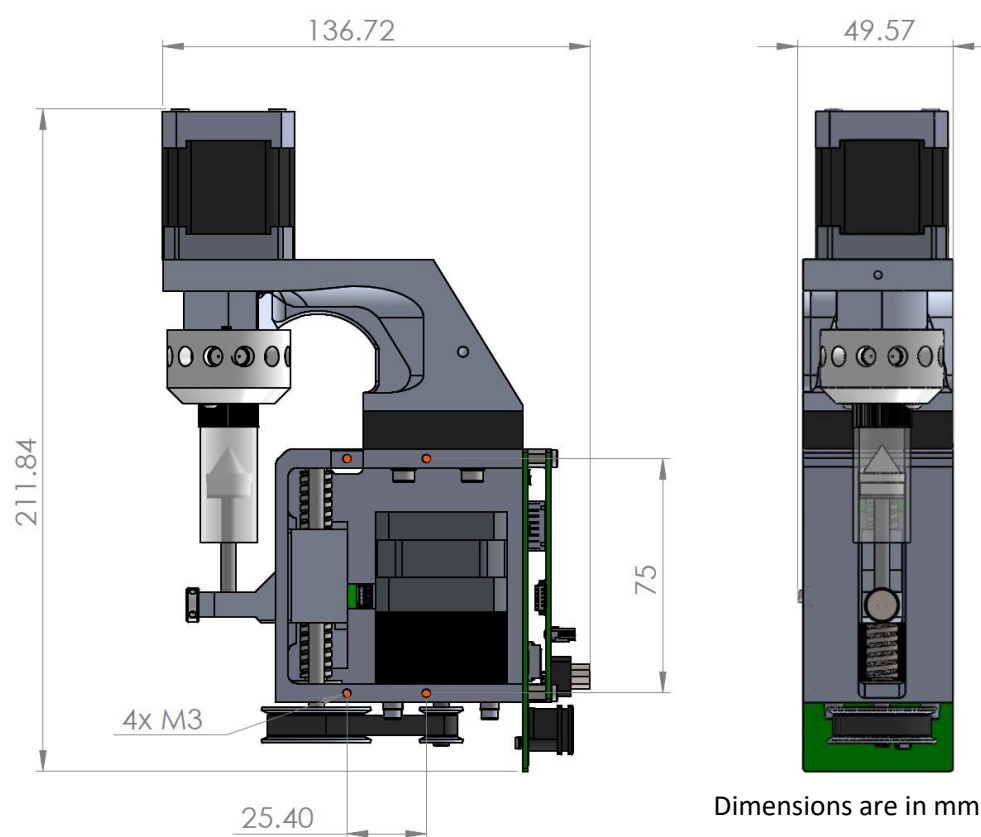


COMPATIBLE SYRINGE MODELS

| Ref. # | Plunger material | Syringe volume [mL] | Min. flow rate [$\mu\text{L}/\text{min}$] | Max. flow rate [$\mu\text{L}/\text{min}$] | Min. dosing volume [μL] |
|----------|------------------|---------------------|---|---|--------------------------------------|
| S-2500-P | PTFE | 2.5 | 0.359 | 20'000 | 5 |
| S-5000-P | PTFE | 5 | 0.717 | 40'000 | 10 |

COMPLETE MODULE (Ref. P111-O)

| | |
|--------------------------|--|
| Dimensions | 211.9 x 136.7 x 49.6 mm |
| Weight | 1.6 kg |
| Default configuration | 5000- μL syringe with PTFE plunger (S-5000-P) 12-position valve with low carryover volume (V-D-1-12-050) |
| External fixation system | 4x M3 screws, position shown in orange |



Electrical characteristics

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| | |
|-------------------------------|--|
| Power | 18-24 VDC, 2.2 A peak |
| Required cables for operation | USB mini to USB, Power cord (power jack 2mm) |

Communication interface

| | |
|----------------------|--|
| Electrical Interface | USB mini, 9-pin D-Sub (other upon request) |
| Interface | USB mini, RS-232 or RS-485 |
| Communication type | Serial communication |

The valve controller is seen as a virtual serial port. There is an on-board FTDI USB to serial chip, so the drivers are automatically installed on Windows 7 and above.

SERIAL COMMUNICATION PARAMETERS

| | |
|-----------|------|
| Baud rate | 9600 |
| Data Bit | 8 |
| Parity | None |
| Stop Bit | 1 |
| Handshake | None |
| End line | <CR> |

View the SPM operating manual for the extensive command set.

Revisions

| Version | Author | Release Date | Modifications | Revised By | Approved By |
|---------|--------|--------------|-------------------|------------|-------------|
| 01.01 | RRY | 15/05/2025 | First release | CAL | RRY |
| 01.02 | RRY | 19/05/2025 | Title update | NFA | RRY |
| 01.03 | RRY | 26/05/2025 | Update volumes | MGE | RRY |
| 01.04 | MGE | 15/07/2025 | Update flow rates | CAL | MGE |

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