

SPM HD/P110-O Programmable Syringe Pump

Low Volume - DATASHEET



Advanced Microfluidics

Environmental conditions

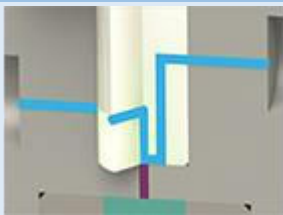
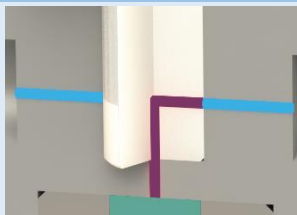
Operating temperature	15-40°C (59-104°F)
Humidity	20-80%, non-condensing
Max pressure	7 bars (102 psi)

Fluidic characteristics

Tube port fittings	Standard ¼-28 UNF, flat-bottom
Wetted materials	PTFE or UHMW-PE, 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	ULTRA-LOW CARRYOVER VOLUME	LOW CARRYOVER VOLUME
Liquid path		
Number of channels inside rotary part	2	1
Number of ports	6	6, 8, 10, 12
Channel diameter	0.5 mm	0.5, 1 mm
Internal volume	5.2 µL	3.5 – 14.9 µL
Carryover volume	1.5 µL	2.6 – 7.8 µL
Dead volume	None	

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.

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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 (or UHMW-PE upon request)
Accuracy	≤ 1.0 % at full stroke

COMPATIBLE SYRINGE MODELS

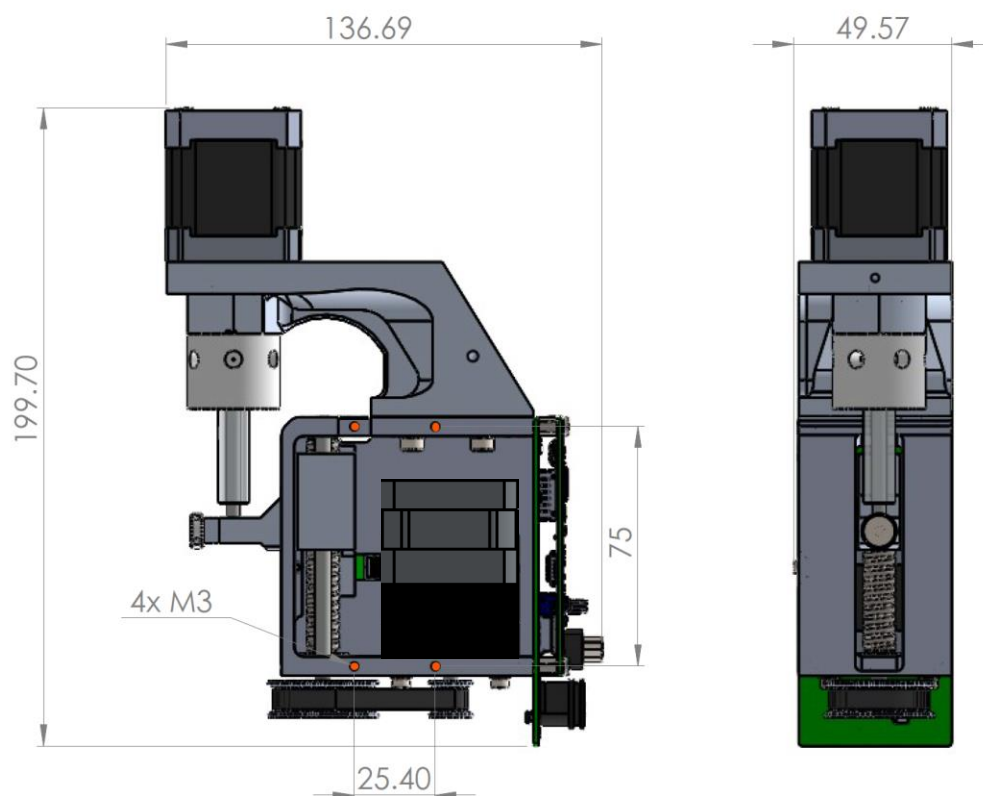
Ref. #	Plunger material	Syringe volume [μL]	Min. flow rate [μL/min]	Max. flow rate [μL/min]	Min. dosing volume [μL]
S-50-P	PTFE	50	0.00717	400	0.1
S-100-P	PTFE	100	0.0144	800	0.2
S-100-U	UHMW-PE	100	0.0144	800	0.2
S-250-P	PTFE	250	0.0359	2'000	0.5
S-500-P	PTFE	500	0.0717	4'000	1
S-500-U	UHMW-PE	500	0.0717	4'000	1
S-1000-P	PTFE	1'000	0.143	8'000	2

COMPLETE MODULE (Ref. P110-O)

Dimensions	199.7 x 136.7 x 49.6 mm
Weight	1.5 kg
Default configuration	500-μL syringe with PTFE plunger (S-500-P) 6-position valve with low carryover volume (V-D-1-6-050)
External fixation system	4x M3 screws, position shown in orange

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Dimensions are in mm

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Electrical characteristics

Power	18-24 VDC, 2.2 A peak
Required cables for operation	USB mini to USB, Power cord (5.5 x 2.1 mm power jack)

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 volume	MGE	RRY
01.04	MGE	15/07/2025	Update flow rates	CAL	MGE
01.05	MGE	08/07/2026	Power jack dimensions	CAL	MGE

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