

Model 22 Syringe Pump

Harvard Apparatus's model '22' pump, the predecessor to the PHD2000 series, was Harvard's most popular pump model for years.

Like the PHD2000 series, the Pump 22 is available in infuse-only and infuse/withdraw versions, and with a choice of syringe racks (standard, micro-syringe, 4x140, and 6/10). Choose the PHD2000 pumps if you need full keypad programmability.

This pump features an LED display and numerical keypad for easy entry of syringe diameter data and flow rates. Flow rate units can be set in $\mu\text{l/hr}$, $\mu\text{l/min}$, ml/hr and ml/min . An optical encoder monitors lead screw rotation to accurately maintain any flow rate. The run LED flashes when syringe plunger movement stops unexpectedly.



Part No.	Description	Unit
HA221	Pump 22, infuse only, standard 2 syringe rack (552222)	ea
HA221/10	Pump 22, infuse only, 6/10 syringe rack (555920)	ea
HA221/4	Pump 22, infuse only, 4x140 syringe rack (552314)	ea
HA221/M	Pump 22, infuse only, micro-syringe rack	ea
HA22W	Pump 22, infuse/withdraw, standard 2 syringe rack (552226)	ea
HA22W/10	Pump 22, infuse/withdraw, 10 syringe rack (552219)	ea
HA22W/4	Pump 22, infuse/withdraw, 4x140 syringe rack (552316)	ea
HA22W/M	Pump 22, infuse/withdraw, micro-syringe rack (554153)	ea

<http://www.instechlabs.com/Pumps/syringe/22.php>

Specifications

	HA221	HA22W
Syringe rack	Dual	Dual
Modes	Infuse	Infuse / withdraw
Accuracy / reproducibility	$\pm 0.35\%$ / 0.05%	$\pm 0.35\%$ / 0.05%
Avg. linear force	47 lbs	47 lbs
Resolution	0.33 $\mu\text{m/step}$	0.33 $\mu\text{m/step}$
Step rate - minimum	6.8 sec/step	6.8 sec/step
Step rate - maximum	416.7 $\mu\text{sec/step}$	416.7 $\mu\text{sec/step}$
Pusher travel rate - minimum	2.9 $\mu\text{m/min}$	2.9 $\mu\text{m/min}$
Pusher travel rate - maximum	47.6 mm/min	47.6 mm/min
RS-232 communication	Yes	Yes
Input power	95-130 VAC, 60Hz; 220-260 VAC, 50Hz selectable	
Dimensions	28 x 22 x 14 cm (11 x 9 x 6 in)	
Weight	4.5 kg (10 lbs)	