Harvard Apparatus Pump Controller

Animal Infusion • Organic Chemistry
Microfluidics • Electrospinning

- Run Multiple Experiments Simultaneously to Increase Laboratory Efficiency
- Modular System – Field Expandable
- Large Color Touch Screen Control with Intuitive Graphical User Interface
- Controls High Precision Harvard Apparatus Syringe Pumps

HB

HA Harvard Apparatus

Infusion Efficiency with World Class Precision

Run up to four precision infusion experiments—simultaneously

HAPC with Four Nanomite Injectors and Harvard Apparatus Stereotaxic Frame (Frame sold separately)

Pump Controller with one Nanomite, PHD ULTRA™, and Pump 11 Elite Family Syringe Pump Modules

Precision infusion for accurate, reliable and repeatable results is critical to the success of your work. High experiment throughput is essential to keep up with your rapidly changing research area. When using fluidics in research, it can be difficult to know which solution will provide the most reliable and repeatable results, yet best supports high throughput and concurrent experiments.

What if you had a pump controller that would allow you to run multiple infusion experiments—simultaneously or independently, to accelerate experiment throughput without compromising accuracy? And what if that tool provided clear feedback on each experiment—in real time?

The Harvard Apparatus Pump Controller (HAPC) allows configuration and control of up to four pumping channels- independently or simultaneously, using an intuitive, touch screen interface. The HAPC delivers precise infusion and provides clear feedback on the status of each infusion—in real time, across all relevant infusion possibilities.

Compatible with Harvard Apparatus Nanomite, PHD ULTRA™ and Pump 11 Elite/ Pico Plus Elite stand-alone syringe pumps and syringe pump modules, the controller is easy to set up and easy to use.

Cited in thousands of studies across a myriad of applications, Harvard Apparatus syringe pumps are best-in-class. In fact, from pre-clinical disease to microfluidic disease modeling to drug creation and drug testing, our syringe pumps are already relied upon globally by tens of thousands of scientists to reach their research objectives. First-to-market as a touch screen, multi-channel plug and infuse syringe pump controller, the HAPC represents a next generation in fluidics research equipment.

Sample Applications

- Animal Infusion—Drug studies, intracerebral injections
- Electrospinning—Create filters for screening pathogens or scaffolding for cell growth
- Organic Chemistry—Drug component creation, titration
- Microfluidics—Lab-On-A-Chip, Organ-On-A-Chip, Point of Care (POC) Development

Expandable, Modular System

Add additional channels when you're ready.

The HAPC is an expandable system. Purchase a two channel system now and add channels as needed. The HAPC comes standard with USB for PC communication.

An entire suite of ASCII commands is available to control the pump remotely with a PC. The pump contains a footswitch input and digital Input/Output for each independent pumping channel.

Easy access to add or remove channels

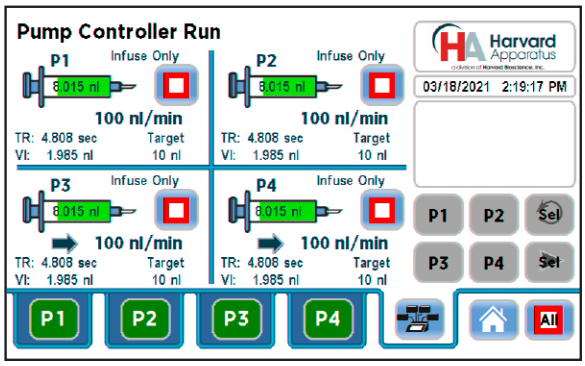
Benefits

- Powerful—Control up to four Harvard Apparatus Nanomites, Pump 11 Elite/Pico and/or PHD ULTRA™ syringe pump modules or touch screen pumps*
- Flexible—Deploy four of the same or four different channel modules, simultaneously or independently
- Scalable—Easily add channel modules as your research needs grow
- Efficient—Run multiple experiments simultaneously for increased lab throughput
- User Friendly—Innovative, intuitive Graphical User Interface for clear setup & run feedback and to easily create & save pump profiles
- Full Method Programmability—compatible with the entire PHD ULTRA™ Method suite

*(Compatible with new or existing pumps, manufactured in the last 5 years)

Intuitive User Interface

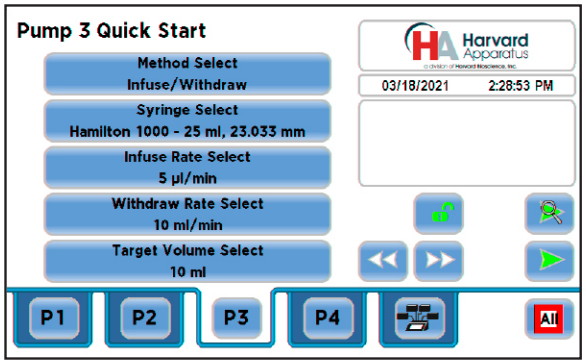
The intuitive Harvard Apparatus Pump Controller graphical user interface controlled with a large 7” LCD color touch screen display allows quick and easy setup for each channel. The display run screen presents the user with all key dispensing parameters for up to four syringe pumps in real time.



Run Screen

Select the infuse method, syringe type, flow rates and target with the touch of a finger.

The HAPC application software provides convenient selection of common syringe models from a syringe select table, as well as insertion of custom syringe specifications.



Channel Quick Start Setup

CONTROLLER SPECIFICATIONS				
Catalog Number	704401	704402	704403	704404
Channels	1	2	3	4
Display	7" WQVGA TFT Color Display with Touch Screen			
Mode of Operation	Continuous with Method and conditional syringe pump control features			
Non-Volatile Memory	Stores all settings			
Connectors:				
RS-485	IEEE-1394, 6 pos			
USB	Type B			
I/O & TTL	15 pin D-Sub connector, per channel			
Footswitch	Mini phono jack (one per channel)			
8-Pin Phoenix	For channel connection to Nanomite Module			
Voltage Range	100-240 VAC, 50/60 Hz			
Dimensions (L X W X H)	8.75 x 10 x 6.25 in (22 x 25.4 x 15.87 cm)			
Weight (populated with four channels)	2.3 kg (5 lbs)			
Atmospheric Conditions				
Operating Temperature	4°C to 40°C (40°F to 104°F)			
Storage Temperature	-10°C to 70°C (14°F to 158°F)			
Storage Humidity	20% to 80% RH, non condensing			
Power	100 to 240 VAC, 50/60 Hz 50 W, 0.5 A fuse			
Classification	Class I			
Pollution Degree	1			
Installation Category	II			
Regulatory Certifications	CE, ETL (UL, CSA), WEEE, EU RoHS & CB Scheme			
Safety Declarations	ANSI/UL 61010-1; CAN/CSA C22.2 No. 61010-1; IEC 61010-1; CB Scheme			
EMC Declaration	FCC 47CFR 15B; EN61326-1			

MODULE SPECIFICATIONS						
	Nanomite Injector	**Pump 11 Elite Syringe Pump Module**	**Pump 11 Pico Plus Elite Syringe Pump Module**	**PHD ULTRA™ Syringe Pump Module**	**PHD ULTRA™ 4400 Syringe Pump Module**	**PHD ULTRA™ XF Syringe Pump Module**
Catalog Number	703602 (Single)	704804 (Single) 704805 (Dual)	704806 (Dual) 704807 (Singe)	703406 (Dual) 703408 (Dual Push/Pull)	703410 (Single)	703514 (Four Syringe)
Accuracy	±0.5%	±0.5%	± 0.35%	± 0.25%	± 0.35%	± 0.5%
Syringe (Min./Max.)	0.5 µl / 1 ml	0.5 µl / 60 ml (10 ml dual)	0.5 ul - 10 ml (Dual) / 60 ml (Single)	0.5 µl / 140 ml	0.5 µl / 140 ml	20 ml / 200 ml
Minimum Flow Rate	3.66 pl/min	1.26 pl/min (0.5 µl syringe)	0.54 pl/min (0.5 µl syringe)	3.16 pl/min (0.5 µl syringe)	3.16 pl/min (0.5 µl syringe)	50.7 nl/min (20 ml syringe)
Maximum Flow Rate:	3.82 ml/min (1 ml syringe)	88.40 ml/min (26.02 ml/min dual)	11.7 ml/min (Dual), 39.7 ml/min (Single)	215.8 ml/min (140 ml syringe)	215.8 ml/min (140 ml syringe)	144.08 ml/min (200 ml syringe)

Note: The Pump 11 Elite, Pico Plus Elite and PHD ULTRA™ XF are fully PC controllable and come with external power supplies. When used with the HAPC, the power supplies are not required. In cases of extremely high pressure applications using the PHD ULTRA™ XF, the external power supplier may be required. Please contact Technical Support for additional application questions.

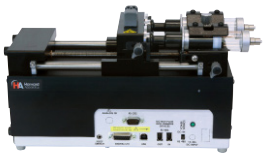
ORDERING INFORMATION

Catalog #	Description
Harvard Apparatus Pump Controller (HAPC)	
704400	HAPC-M: 1 Channel Module Upgrade, no controller.
704401	HAPC-1: Controller populated with one channel module.
704402	HAPC-2: Controller populated with two channel modules.
704403	HAPC-3: Controller populated with three channel modules.
704404	HAPC-4: Controller populated with four channel modules.
Pump Modules*	
703602	Nanomite Injector, Single Syringe, Black
704804	Pump 11 Elite Single Syringe Pump Module, Black
704805	Pump 11 Elite Dual Syringe Pump Module, Black
704806	Pump 11 Pico Plus Elite Dual Syringe Pump Module, Black
704807	Pump 11 Pico Plus Elite Single Syringe Pump Module, Black
703406	PHD ULTRA™ Satellite Syringe Pump Module
703408	PHD ULTRA™ Push/Pull Satellite Module
703410	PHD ULTRA™ 4400 Satellite Module
703514	PHD ULTRA™ XF Syringe Pump Module
Accessories	
702215	Footswitch (with Phono Plug)
704405	HAPC-B: Controller Blank Panel
704021	RS-485 Cable, HAPC Channel to pump, 1 m (3.3 ft)
704001	RS-485 Cable, HAPC Channel to pump, 2 m (6.6 ft)
704020	RS-485 Cable, HAPC Channel to pump 9 m (29 ft)

Nanomite

Pump 11 Elite/Pico Plus Elite

Pump 11 Elite/Pico Plus Elite



PHD ULTRA™

Harvard Apparatus

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