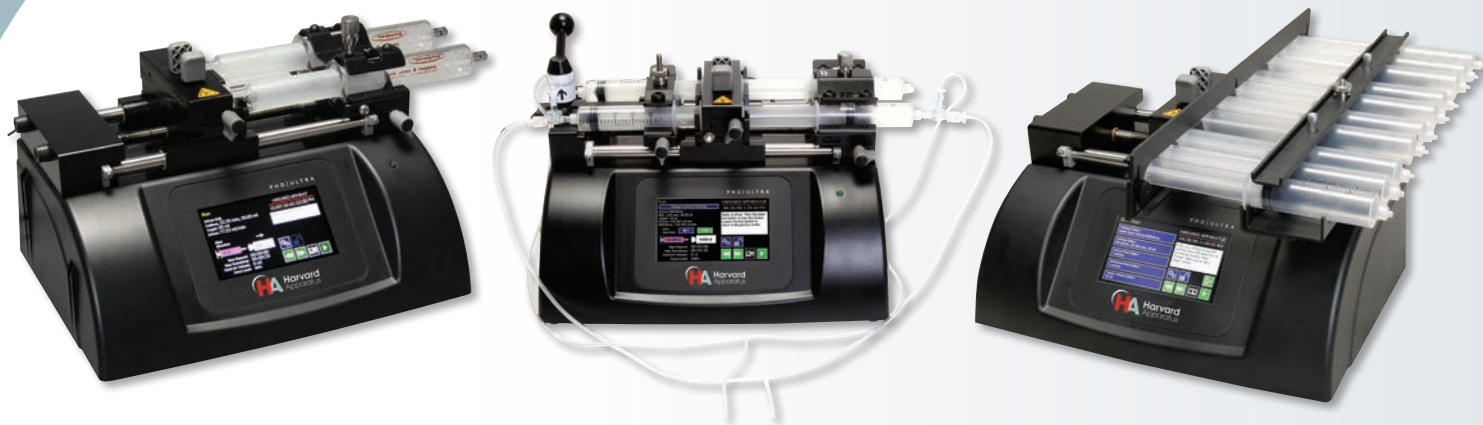


PHD ULTRA™ Syringe Pump



KEY FEATURES

- **Smooth, accurate flow down to the pl/min**
- **Easy-to-use LCD color touch screen interface**
- **Available in infuse only and infuse/withdraw programmable configurations**
- **Easily program simple to complex Methods without a PC****
- **Accommodates Syringe Sizes 0.5 µl – 140 ml**

APPLICATIONS

- **Animal Infusion/Injection**
- **Drug dose versus drug response relationship**
- **Animal feeding (single or multiple)**
- **Toxicology Studies**
- **Diabetes Studies**
- **Titration**

The PHD ULTRA™ is the solution for your most demanding fluidics applications. This pump represents the latest technology in syringe pumps and was developed utilizing the feedback of the world's largest population of syringe pump users.

This advanced syringe pump family has a new high performance patent pending fluidics drive mechanism for the smoothest, most accurate flow rates of any syringe pump.

The PHD ULTRA™ Pumps are available with Infusion Only, Infusion/Withdrawal Programmable and Push/Pull configurations. Each are designed for different operating environments and varying degrees of operational flexibility.

Advanced Connectivity

The PHD ULTRA™ has a footswitch input, USB serial port for computer control, RS-485 ports for daisy chaining pumps and Digital I/O for external control via an independent computer or device. There is also an optional feature for daisy chaining pumps through the RS-232 (RJ-11) ports.

Touch Screen Interface

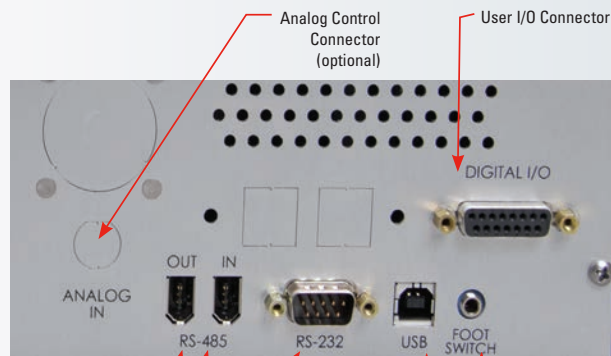
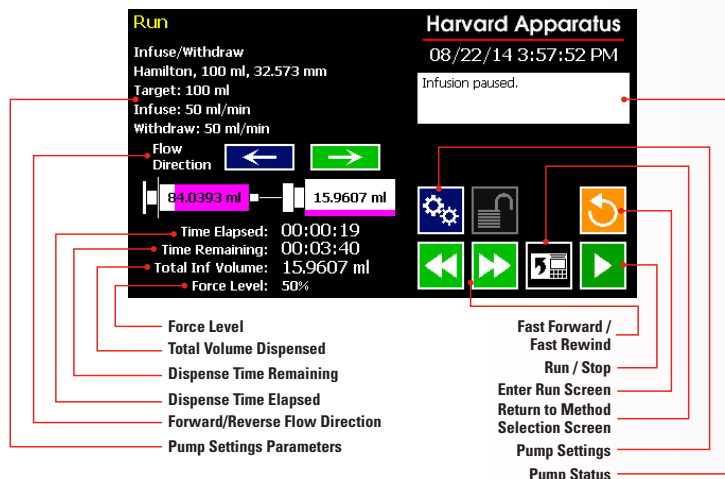
PHD ULTRA™ provides a simple touch screen interface setup to run your complex experiments.

All key parameters are clearly displayed on the run screen. Easily program simple to complex Methods without a PC**. The programmable version of the PHD ULTRA™ has the capability to store several multi-step Method programs.

**The PHD ULTRA™ is for research only. Not for use on humans. **Infusion/Withdrawal Programmable units only*

Harvard Apparatus PHD ULTRA™ Syringe Pump

PHD ULTRA™ Run Screen



RS-485 Connection (for Pump to Pump communication)
 RS-232 Serial Connection (for communication from PC)
 USB Serial Input (for communication from PC)
 Footswitch Input (switch sold separately)

Specifications

Type	Microprocessor Multiple Syringe, Infusion Only, Infusion/Withdrawal or Infusion/Withdrawal Programmable
Accuracy	±0.25%
Reproducibility	±0.05%
Syringes:	
Type	Plastic, Glass or Stainless Steel
Size Minimum	0.5 µl
Size Maximum	140 ml
Flow Rate:	
Minimum	1.50 µl/min
Maximum	216.0 ml/min
Display	4.3" WQVGA TFT Color Display w/ Touchscreen
Connectors:	
RS-232	9-pin D-Sub Connector
RS-485	6-position IEEE-1394
USB	Type B
I/O & TTL	15-pin D-Sub Connector
Footswitch	Phono jack
Linear Force	34 kg (75 lbs) @ 100% Force Selection
Step Resolution	0.082 µm/µstep
Voltage Range	Universal input 100/240 VAC, 50/60 Hz
Dimensions (H x W x D)	10.16 x 30.48 x 21.59 cm (4 x 12 x 8.5 in)
Weight	4.5 kg (10 lbs)
Regulatory Certifications	CE, ETL (UL, CSA), WEEE, EU RoHS & CB Scheme

Ordering Information

Order #	Product
PHD ULTRA™	
70-3005	PHD ULTRA™ Infusion Only
70-3006	PHD ULTRA™ Infusion/Withdrawal
70-3007	PHD ULTRA™ Infusion/Withdrawal Programmable
PHD ULTRA™ SYRINGE RACK KITS (Ordered with 70-3005, 70-3006, or 70-3007)	
70-3021A	4 x 140 Multi-Syringe Rack for PHD ULTRA™
70-3022A	Microliter Rack for PHD ULTRA™, Independently Holds 4 Syringes
70-3024A	6/10 Multi-Syringe Rack for PHD ULTRA™, Independently Holds 10 Syringes
PHD ULTRA™ PUSH/PULL	
70-3008	PHD ULTRA™ Infusion/Withdrawal
70-3009	PHD ULTRA™ Infusion/Withdrawal Programmable
OPTIONAL ACCESSORIES	
70-4000	RS-485 Cable for Pump-to-Pump Communication, 0.5 m (1.6 ft)
70-4002	USB Cable for PC-to-Pump Communication, 2 m (6.6 ft)
70-4004	RS-232 Cable for PC-to-Pump Communication, 9-pin D-sub, 2 m (6.6 ft)
70-2215	Footswitch (with Phono Plug)
Additional PHD Ultra Models Available, please contact techsupport@harvardapparatus.com for more information.	

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 **Infusion/Withdrawal Programmable units only



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