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PHD 4400 Hpsi

High Force/High Pressure Programmable Syringe Pump



- Delivers >200 lbs (91 kg) linear pumping force across a wide flow rate range
- Accurate and smooth flow
- Ideally suited for stainless steel syringes
- Easy-to-use interface
- Control from your PC via serial interface
- 2 year warranty

The PHD 4400 Hpsi Programmable Syringe Pump is a single syringe infuse-withdraw pump equipped with all the functions of the PHD 22/2000 Programmable Model, but with a high-power stepper motor to provide up to 200 lbs. of linear force.

Pressure and Speed

The PHD 4400 Hpsi can deliver up to 182.40 ml/min using a 100 mm stainless steel syringe. Maximum pressure is dependent on syringe size. For stainless steel syringes, see page A66.

Flexibility and Easy Programmability

- **Two standard infusion modes (continuous or volume dispense)**
- **Internal programmable pump control in all models**
- **In Program Mode, complex infuse and withdraw applications can be easily created, stored in the pumps nonvolatile memory and recalled for later use.**
- **Autofill Mode provides continuous delivery when the pump is used in conjunction with either a standard or high pressure valve box and a fluid reservoir.**

Ease of Use

Setting the pump is quick and easy. Input the inside diameter of the syringe or use the internal Syringe Lookup Table to automatically input the syringe diameter based on the syringe manufacturer and size. Select a mode (continuous delivery or volume dispense) and a rate and you are ready to go.

Features

Universal Input Power Supply: No need to change AC line switches, fuses, or wires.

Nonvolatile Memory: Stores all operational data and program sequences.

Stall Detection: An optical detector verifies motor movement. Stalls due to jamming or excessive back pressure are reported.

Visual/Audible Alarms

Power-Up Options: Powers-up in Standby or Running Mode after power interruption.

RS-232 Connections: Allows computer control of single pump or daisy-chaining of multiple pumps. Also allows for scale and printer connections.

TTL Connections: Allows for synchronizing pump with external devices, controlling an external valve, changing direction of travel, etc.

Modes of Operation

Pump Runs continuously in the infuse or refill directions until stopped.

Volume Runs until specified volume has been pumped or refilled.

Program Pump operates according to specified sequence of instructions.

(Note: All modes interact with Autofill feature.)

Specifications

Type	Microprocessor single syringe, infuse/withdraw
Accuracy	±0.35%
Reproducibility	±0.05%
Syringe:	
Type	Stainless steel**
Size Minimum	2.5 ml
Size Maximum	100 ml
Flow Rate:	
Minimum	0.0076 µl/min using 2.5 ml stainless steel syringe
Maximum	182.40 ml/min using 100 ml stainless steel syringe
Nonvolatile Memory	Stores all settings
RS-232	RJ-11 4-conductor
TTL	9-pin D-sub connector
Average Linear Force	>200 lbs (91 kg)*
Fluid Pressure*	>1,800 psi with an 8 ml stainless steel syringe, for example
Drive Motor	1.8° step angle motor
Motor Drive Control	Microprocessor controlled from 1/2 to 1/32 microstepping
Motor Steps per One Rev. of Leadscrew	800 steps at 1/2 stepping or 12,800 at 1/32 stepping
Step Resolution	0.082 µm/step
Step Rate:	
Minimum	27.3 sec/step
Maximum	416.7 µsec/step
Pusher Travel Rate:	
Minimum	0.18 µm/min
Maximum	190.676 mm/min
Power	75 W, 0.75 A fuse
Voltage Range	Universal input 100/240 VAC, 50/60 Hz
Dimensions, H x W x D	17 x 23 x 29 cm (6.7 x 9.0 x 11.4 in)
Weight	6.4 kg (14 lbs)
Remote Cable	9.1 m (30 ft) Length

** For work range, refer to User's Manual for details.*
*** Plastic and glass syringes are not recommended because of high force.*

Order #	Product
PY8 70-2200	PHD 4400 Hpsi Programmable Syringe Pump, Standard
PY8 70-2201	PHD 4400 Hpsi Programmable Syringe Pump, Remote

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