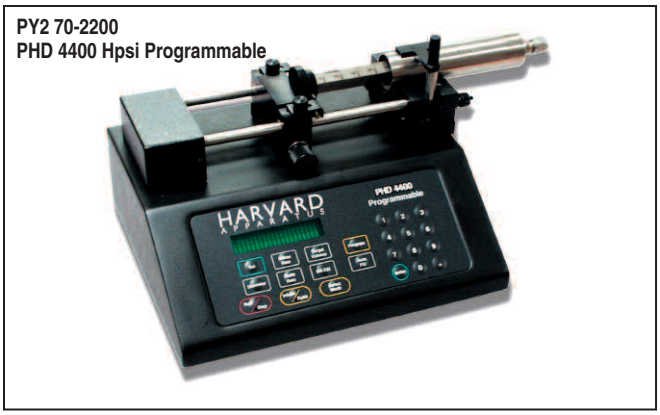
PHD 4400 Hpsi

High Force/High Pressure Programmable Syringe Pump



The PHD 4400 Hpsi Programmable Syringe Pump is a single syringe Infusion/Withdrawal pump equipped with all the functions of the PHD 22/2000 Programmable Model, but with a high-power stepper motor to provide more than 200 lbs. of linear force. The PHD 4400 Hpsi is available in two configurations; standard and remote. The remote model is supplied with a standard 5 foot cable that connects the control box to the pumping mechanism.

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 A74.

Flexibility and Easy Programmability

- Two standard infusion modes (continuous or volume dispense)
- In Program Mode, complex infusion and withdrawal 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, see page A34.

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

- Nonvolatile Memory: Stores all operational data & 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.)

Key Features

- Accurate and smooth flow
- Ideally suited for stainless steel syringes
- Easy-to-use interface
- RS-232 serial port for computer control
- Delivers over 200lbs of pumping force across a wide flow rate range
- Legendary reliability – 2 year warranty

Applications

- High Pressure Injections
- Drug Delivery
- Pumping Highly Corrosive Fluids
- Injecting into High Pressure Reaction Vessels

Specifications

Type	Microprocessor single syringe, infusion/withdrawal
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
Maximum	182.40 ml/min
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
PY2 70-2200	PHD 4400 Hpsi Programmable Syringe Pump, Standard
PY2 70-2201	PHD 4400 Hpsi Programmable Syringe Pump, Remote