

Pump 11 Plus



Previous



Next



Section Table of Contents



Main Table of Contents



Product Index



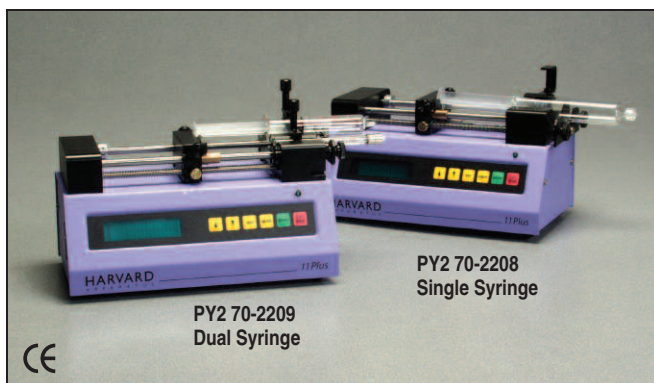
Search



WWW Home



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Key Features

- Infusion only or infusion/withdrawal models
- Small footprint
- RS-232 option for computer control
- Legendary reliability – 2 year warranty

Applications

- Drug/Nutritional studies
- Microfluidics/Nanofluidics
- ESI Mass Spec
- Electrospraying
- MS Calibration

Harvard Apparatus' Pump 11 Plus combines smoother flow and updated features to create a high performance syringe pump with a basic syringe pump price!

Bright Display and Easy-To-Use Interface

A two-line 16 character vacuum fluorescent display and six membrane keypad make this a powerful, easy-to-use syringe pump. Only two entries are required to start pumping; Syringe Inside Diameter (mm) and flow rate. The flow rate can be changed while the pump is running.

Two Modes of Operation, Constant Flow Rate & Volume Dispense

The Pump 11 Plus will operate continuously in RATE mode or accurately dispense a specific amount of fluid in VOLUME mode.

Versatile

Select from two different models. The standard Pump 11 Plus model has the following features:

- Infusion Only
- End of Travel Limit Stop
- Anti-Siphon Bracket

The Pump 11 Plus Advanced model has the same features as the standard model, but also includes:

- Infusion/Withdrawal
- Dual RS-232 Serial ports

Both models are available with either a single syringe configuration or dual syringe configuration. Select the pump that best fits your application.

Non-Volatile Memory

The micro-stepping pump profiles deliver very smooth and consistent flow over the entire flow rate range. These pumps feature non-volatile memory. The pump remembers its last syringe size, flow rate used and configuration settings.

Safety

The Pump 11 Plus motor will not shut itself off in case of overload, rather it will remain in a stalled position with no damage. A manual adjustment collar on the guide rod prevents the syringe plunger from hitting bottom.

CE Mark Approved

The Pump 11 Plus meets all relevant European EMC and Safety requirements for laboratory equipment.

Specifications

Type	Microprocessor single or dual syringe, infusion only or infusion/withdrawal
Accuracy	±0.5%
Reproducibility	±0.1%
Syringe:	
Type	Plastic or glass
Size (single syringe)	0.5 µl to 50/60 ml
Size (dual syringe)	0.5 µl to 10 ml
Flow Rate:	
Single Syringe	0.0014 µl/hr to 26.56 ml/min
Dual Syringe	0.0014 µl/hr to 7.91 ml/min
Non Volatile Memory	Storage of all settings
RS-232	Advanced models only
TTL	No
Average Linear Force	16 lbs
Drive Motor	0.9° step angle motor
Motor Drive Control	1/4 microstepping
Motor Step per One Rev. of Leadscrew	3,200 steps
Step Resolution	0.33 µm/step
Step Rate:	
Minimum	6.8 sec/step
Maximum	416.7 µsec/step
Pusher Travel Rate:	
Minimum	0.7 µm/min
Maximum	15 mm/min
Input Power	12 VDC 1.5 Amps
Voltage Range (Power Supply)	Universal input 100/240 VAC, 50/60 Hz, 18 watts (Use only Harvard Apparatus approved supply and line cord)
Dimensions, H x W x D	13 x 22.9 x 11.4 cm (5 x 9 x 4.5 in)
Weight	2.1 kg (4.6 lb)

Order # Product

PY2 70-2208	Harvard Pump 11 Plus Single Syringe
PY2 70-2209	Harvard Pump 11 Plus Dual Syringe
PY2 70-2211	Harvard Pump 11 Plus Advanced Single Syringe with Dual RS-232
PY2 70-2212	Harvard Pump 11 Plus Advanced Dual Syringe with Dual RS-232