

NEW Pump 11 Elite



KEY FEATURES

- Easy to use touch screen and icon interface
- Outstanding flow performance
- Easily run simple to complex methods without a PC
- Alphanumeric keypad for easy Method naming and recall
- Adjustable linear force up to 35 lbs
- Upgrade new versions of software remotely
- Legendary reliability – 2 year warranty

APPLICATIONS

- Microfluidics
- Drug/Nutritional Delivery
- Microdialysis
- Emulsification
- Bioreactors
- Electrospinning
- Mass Spectrometry

The Pump 11 Elite Series of syringe pumps expands its capabilities to satisfy your experimental requirements. These compact syringe pumps carry on the tradition as the premier workhorse infusion pump, offering unparalleled ease of use with a high resolution color touch screen with intuitive icon interface. The Pump 11 Elite Series allows you to create, save and run simple to complex methods without a PC.

Superior Performance

These syringe pumps have a new mechanism that includes a tight gripping, more secure syringe clamp for syringes ranging from 0.5ul to 60ml (single syringe) and 0.5µl to 10 ml (dual syringe). The Pump 11 Elite Series offers enhanced flow performance with high accuracy and smooth flow from 1.28 pl/min to 88.28 ml/min (25.99 ml/min for dual syringe rack).

The Pump 11 Elite Series is available in Infusion Only or Infusion/Withdrawal Programmable Models with single or dual syringe racks. All Pump 11 Elite syringe pumps have a footswitch input and USB serial port for computer control. The Infusion/Withdrawal Programmable models also have RS-485 (or optional RJ-II) ports for daisy chaining pumps and Digital I/O for external control via an independent computer or device (see page 13 for more information on connectivity).

Since 1901 Harvard Apparatus has been supporting bioresearch fluidics requirements with a key milestone being the introduction of the first commercial syringe pump for bioresearch in 1956. Since 1956, over 70,000 satisfied syringe pump users around the world have made Harvard Apparatus syringe pumps the worlds #1 choice.

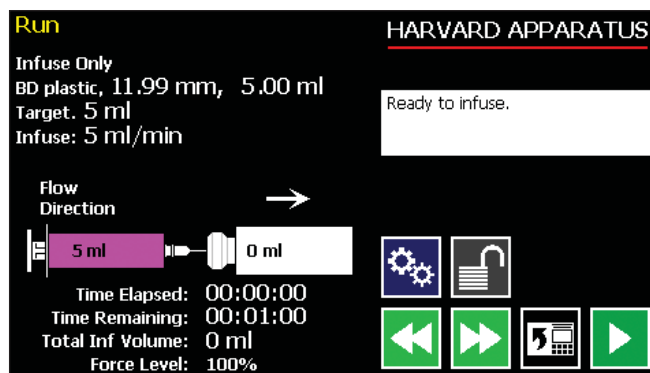
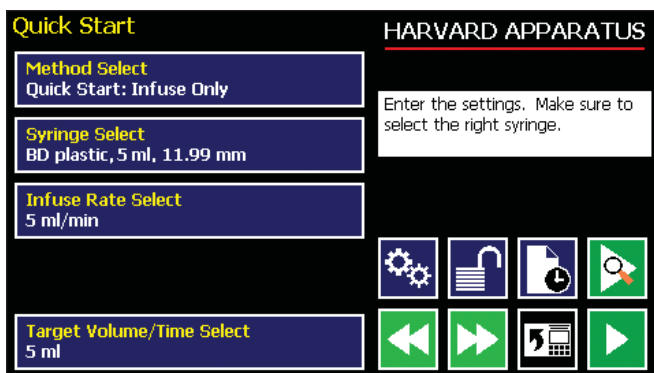
The Pump 11 Elite Series is a family of accurate, low flow syringe pumps designed for use in applications including: mass spec calibration, drug and nutritional studies, reactor dosing, electrospinning and more.

Easy-to-Use Interface

The Pump 11 Elite Syringe Pumps are very easy to use with an LCD color touch screen and icon interface. The Message Area of the touch screen is used to display helpful instructions for the currently displayed screen. It is also used to display error or warning messages to indicate problem conditions in a Method or error conditions during pump operation. The Run Screen shows all of the pump parameters on one screen for easy review.

The software is organized into three main navigational branches, the quick start Methods, user-defined Methods, and system settings. You can control operations directly through the touch screen or remotely from an independent computer or device via the external I/O interface.

NEW Pump 11 Elite (continued)



Pump Models

The Pump 11 Elite Syringe Pumps are available in two configurations designed for different operating environments and varying degrees of operational flexibility.

1. **Infusion Only (single and dual syringe models):** This model supports infusion operations at user-defined flow rates and with selectable target volume or time values to control the total infusion volume. The Infusion Only models do not include programmable, user-defined Methods.
2. **Infusion/Withdrawal Programmable (single and dual syringe models):** This model supports infuse only, withdraw only, infuse/withdraw and withdraw/infuse operations at user-defined flow rates and with selectable target volume or time. This model also allows users to create and store up to two user-defined Methods of 50 steps each on the pump.

Accessories

A full range of accessories are compatible with the Pump 11 Elite including syringe heaters, in-line heaters and coolers, nanofluidic circuits, connectors, tubing, syringes and more.

Program Description

To operate the Pump 11 Elite, the user defines all the required parameters for infusing or withdrawing liquids through a Method. This may be a Quick Start Method, Pre-Programmed or User-Defined Method. The basic operation is a simple 3-step procedure:

1. Select a method
2. Enter operating parameters
3. Preview or Run your method

Quick Start Methods are simple infusions, withdrawals or a combination (depending upon the model). Custom user-defined Methods can be created when more advanced programming is required. The setup for a custom Method is easy using the standard profiles found on all Infusion/Withdrawal Programmable Elite Models. The list of available profiles is:

Constant Rate	Gradient (binary)
Ramp	Autofill

By programming custom (user-defined) Methods into the pump, multi-user errors are reduced. Easily transfer Methods to other pumps and/or download Methods from a PC. Forget having to duplicate Method-development efforts for each new pump added to your system.

Alarms

There are several alarms available on the Model 11 Elite Syringe Pumps:

- End of Run
- Near End of Run
- Power Up
- Stall

Advanced GLP Documentation Features

- Download experimental parameter information to PC
- Alphanumeric keypad for method naming

Adjustable Force

The maximum linear force of the Pump 11 Elite is 16 kg (35 lbs). Depending upon the syringes you are working with and your overall experimental setup you may want to adjust the amount of force applied to the pusher block. You can select a percentage of the total force from 20% to 100%. Refer to the user's manual for suggested force level settings.

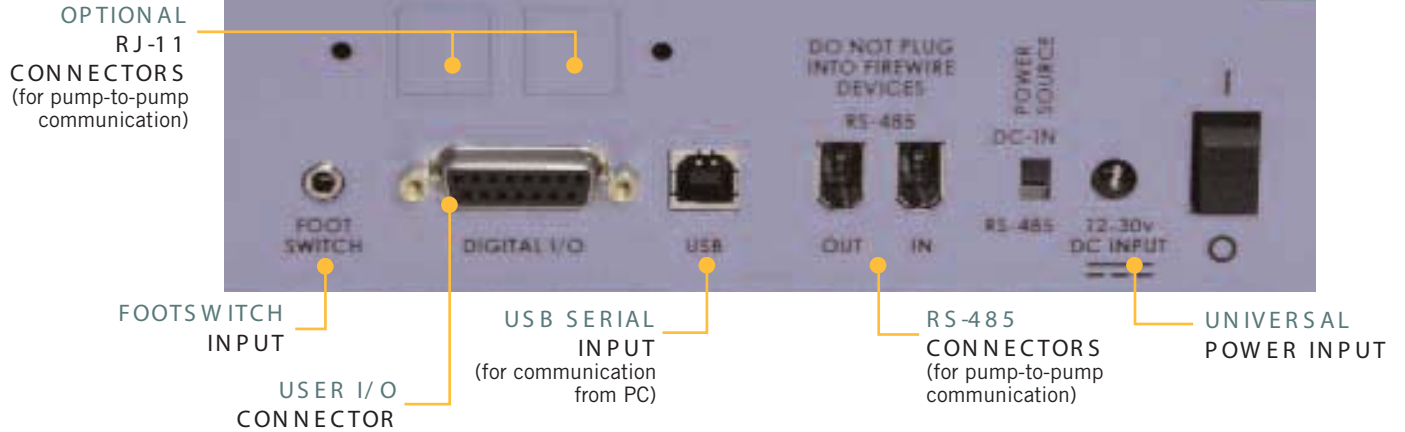
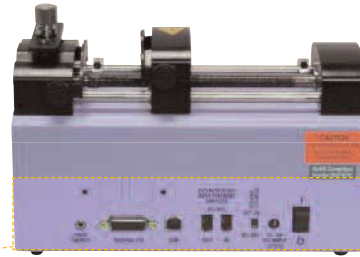
CONTROL MULTIPLE PUMPS VIA DAISY CHAIN WITH RS-485



NEW Pump 11 Elite (continued)

Advanced Connectivity

The infusion only Pump Syringe 11 Elite Pumps come standard with a Footswitch input and USB connector. The infusion/withdrawal programmable Pump 11 Elite Syringe Pumps include a Footswitch input, USB, RS-485 and I/O connectors. There is also an option for RJ-11 connectors on the programmable pumps. This option has to be ordered at the time the pump is ordered.



Pump 11 Elite Specifications	
TYPE	Microprocessor single or dual syringe, infusion only or infusion/withdrawal programmable
ACCURACY	±0.5%
REPRODUCIBILITY	±0.05%
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	1.28 pl/min to 88.28 ml/min
Dual Syringe	1.28 pl/min to 25.99 ml/min
DISPLAY	4.3" WQVGA TFT color display with touch screen
CONNECTORS:	
RS-485	IEEE-1394, 6 position
USB	Type B
I/O & TTL	15 pin D-Sub connector
Footswitch	mini phono jack
AVERAGE LINEAR FORCE	16 kg (35 lbs) @ 100% Force Selection
STEP RESOLUTION	0.069 µm/µstep
INPUT POWER	12-30 VDC
INPUT POWER CONNECTION	2.5 mm ID x 5.5 mm OD male plug
POWER SUPPLY	100-240 VAC, 50/60 Hz, 8 Watts Universal Power Supply. Use Only a Harvard Apparatus Approved Power Supply and Line Cord
DIMENSIONS, H x W x D	22.6 x 17.78 x 15 cm (9 x 7 x 6 in)
WEIGHT	2.1 kg (4.6 lbs)
REGULATORY CERTIFICATIONS	CE, ETL (UL, CSA), WEEE, EU RoHS & CB Scheme

FOOTSWITCH INPUT	Start and stop a pump
USB SERIAL INPUT	Control your pump with a computer
RS-485 CONNECTORS	Connect multiple pumps together (daisy chain up to 99 pumps) Connect satellite pumps to the Master pump for binary gradient system (% composition)
RJ-11 CONNECTORS (OPTION)	Connect multiple pumps together (daisy chain)
USER I/O CONNECTOR	
Direction Control Input	Set pump to infuse or withdraw
Trigger Input	Connect an external device to start and stop a pump or Method
Trigger 1 Output	Signal another device to start and stop a pump or Method
Run indicator	Connect an external LED or monitoring device to a pump

Order #	Product
HA1100	Pump 11 Elite Infusion Only Single Syringe
HA1100D	Pump 11 Elite Infusion Only Dual Syringe
HA1100W	Pump 11 Elite Infusion/Withdrawal Programmable Single Syringe
HA1100WD	Pump 11 Elite Infusion/Withdrawal Programmable Dual Syringe

NEW Pump 11 Pico Plus Elite



KEY FEATURES

- Easy to use touch screen and icon interface
- Outstanding flow performance
- Easily run simple to complex methods without a PC
- Alphanumeric keypad for easy Method naming and recall
- Adjustable linear force up to 35 lbs
- Upgrade new versions of software remotely
- Legendary reliability – 2 year warranty

APPLICATIONS

- Microfluidics
- Drug/Nutritional Delivery
- Microdialysis
- HPLC
- Cellular Injections
- Mass Spectrometry

The Pump 11 Pico Plus Elite is the lowest flow, highest accuracy syringe pump. It offers enhanced flow performance with high accuracy and smooth flow from 0.54 pl/min to 11.70 ml/min. This dual syringe pump offers unparalleled ease of use with a high resolution color touch screen with intuitive icon interface. The Pump 11 Pico Plus Elite allows you to create, save and run simple to complex methods without a PC.

The Pump 11 Pico Plus Elite is a dual syringe Infusion/Withdrawal Programmable Model. It 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 (see page 13 for more information on connectivity). There is also an option of daisy chaining pumps through the RS-232 (RJ-11) ports. For more information on the Pump 11 Pico Plus Elite including features and programming see the Pump 11 Elite on page 11.

Pump 11 Pico Plus Elite Specifications

TYPE	Microprocessor dual syringe, infusion/withdrawal programmable
ACCURACY	±0.35%
REPRODUCIBILITY	±0.05%
SYRINGE:	
Type	Plastic or glass
Size Minimum	0.5 µl
Size Maximum	10 ml
FLOW RATE:	
Minimum	0.54 pl/min
Maximum	11.70 ml/min
DISPLAY	4.3" WQVGA TFT color display with touch screen
CONNECTORS:	
RS-485	IEEE-1394, 6 position
USB	Type B
I/O & TTL	15 pin D-Sub connector
Footswitch	Mini phono jack
AVERAGE LINEAR FORCE	16 kg (35 lbs) @ 100% Force Selection
STEP RESOLUTION	0.031 µm/µstep
INPUT POWER	12-30 VDC
INPUT POWER CONNECTION	2.5 mm ID x 5.5 mm OD male plug
POWER SUPPLY	100-240 VAC, 50/60 Hz, 8 Watts Universal Power Supply, Use Only a Harvard Apparatus Approved Power Supply and Line Cord
DIMENSIONS, H x W x D	22.6 x 17.78 x 15 cm (9 x 7 x 6 in)
WEIGHT	2.1 kg (4.6 lbs)
REGULATORY CERTIFICATIONS	CE, ETL (UL, CSA), WEEE, EU RoHS & CB Scheme

Order # Product

HA1100DU	Pump 11 Pico Plus Elite Infusion/Withdrawal Programmable Dual Syringe
----------	---