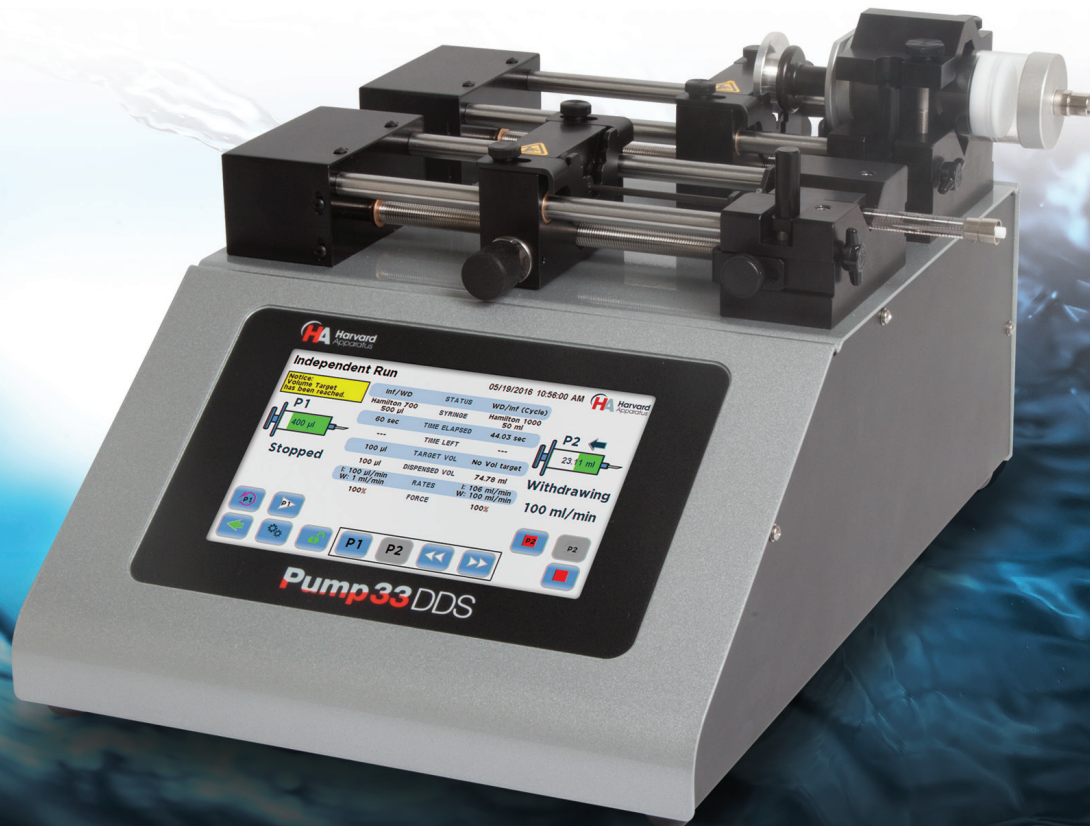


Pump33DDS

Dual Drive System

Dual Independent Channel Syringe Pump



Two independently controlled pumping channels in one instrument

High accuracy $\pm 0.25\%$

Graphical user interface with 7" LCD color touchscreen display

Accommodates syringe sizes 0.5 μ l to 60 ml

Smooth flow down to 1.02 μ l/min

USB, RS-232 and TTL connectivity

Pump33 DDS

The Harvard Apparatus Pump 33 DDS (Dual Drive System) is a leap forward in syringe pump capability. The Pump 33 DDS has two independent pumping channels controlled by an intuitive touch screen interface.

This multi-purpose syringe pump employs advanced syringe mechanisms that include a tight gripping, extremely secure syringe clamp that accommodates syringe sizes 0.5 ul to 60 ml. The Pump 33 DDS offers enhanced flow performance with high accuracy and smooth flow from 1.02 pl/min to 106 ml/min.



Graphical User Interface

The intuitive Pump 33 DDS graphical user interface controlled with a large 7" LCD color touchscreen display allows quick and easy setup. The display run screen presents the user with all key dispensing parameters in real time. Syringe tables containing all major syringe manufacturers allow simple selection of any compatible syringe size. Audible Alarms, Adjustable Force and Screen Lock are all features that are available with a touch of the screen.

Advanced Connectivity

The Pump 33 DDS comes standard with USB and RS-232 for PC communication and RS-485 for pump-to-pump communication. An entire suite of ASCII commands is available to control the pump remotely with a PC. The pump contains a footswitch input and digital input/output for each independent pumping channel.

Independent Run 05/19/2016 10:56:00 AM Harvard Apparatus

Notice: Volume Target has been reached.

Inf/Wd	STATUS	WD/Inf (Cycle)
Hamilton 700 500 µl	SYRINGE	Hamilton 1000 50 ml
60 sec	TIME ELAPSED	44.03 sec
---	TIME LEFT	---
100 µl	TARGET VOL	No Vol target
100 µl	DISPENSED VOL	74.78 ml
I: 100 µl/min W: 1 ml/min	RATES	I: 106 ml/min W: 100 ml/min
100%	FORCE	100%

Real-Time Graphical Syringe Status Channel 1
Stopped 400 µl

Real-Time Graphical Syringe Status Channel 2
Withdrawing 100 ml/min 23.11 ml

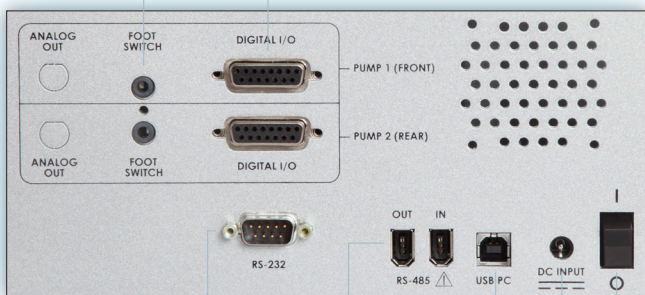
Reset Counters Channel 1

Return to Condition Selection Screen

System Settings **Screen Lock/Unlock** **Fast Forward/Fast Reverse** **Run/Stop Channel 2** **Run/Stop Channels 1 and 2** **Reset Counters Channel 2**

Pump Channel 1 & 2 Footswitch Connections
(Footswitch sold separately)

Pump Channel 1 & 2 Digital I/O Connections



RS-232 Serial Input **RS-485 Pump-to-Pump Communication Ports** **USB Serial Input** **DC Input (Power Supply included)** **Main Power Switch**

Select Syringe P1 05/04/2016 14:40:40 Harvard Apparatus

Custom Syringe	Gang x1	Syringe Size Selection	PAGE
Air-Tite	PAGE	5 ml, 11.989 mm	PAGE
HSW Norm-Ject	↑	10 ml, 14.427 mm	↑
Becton Dickinson Glass	LINE	20 ml, 19.05 mm	LINE
Becton Dickinson Plasti-pak	LINE	30 ml, 21.59 mm	LINE
Cadence Science Micro-Mate Glass	↓	50 ml, 26.594 mm	↓
CMA Microdialysis	PAGE	60 ml, 26.594 mm	PAGE
Hamilton 700 Glass	↓		↓

Pump 33 DDS Syringe Selection Screen

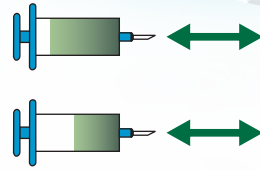
Harvard Apparatus syringe pumps are for research purposes only. Not for use on humans.

Operating Conditions

Three operating conditions are available to accommodate a wide range of setups and experimental protocols.

Independent Condition

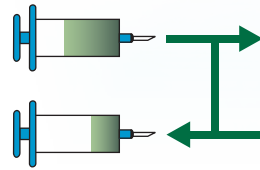
Independent Condition allows the Pump 33 DDS to operate as two separate syringe pumps named P1 & P2. Each syringe will operate independently with different syringe types, size, force, target (volume or time, mode dependent).



	Mode	Syringe	Rate	Target Volume/Time
P1	Infuse, Withdraw, Infuse/Withdraw, Withdraw/Infuse	Any size/type 0.5 µl - 60 ml	Any within syringe capability	Any (Mode Dependent)
P2	Infuse, Withdraw, Infuse/Withdraw, Withdraw/Infuse	Any size/type 0.5 µl - 60 ml	Any within syringe capability	Same as P1

Reciprocating Condition

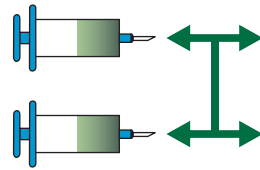
In reciprocating condition, both syringe channels move in opposite directions at the same rate using the same syringe size and type. When combined with a valve box, the reciprocating condition can provide the continuous fluidic delivery of a peristaltic pump with the accurate, pulseless, low flow rates provided by a syringe pump.



	Mode	Syringe	Rate	Target Volume/Time
P1	Infuse/Withdraw, Withdraw/Infuse	Any size/type 0.5 µl - 60 ml	Any within syringe capability	Any
P2	Opposite of P1	Same as P1	Same as P1	Same as P1

Twin Condition

Twin Condition allows both syringes to operate in the same mode using the exact same syringe type, syringe size, force, target (volume or time) and flow rate settings. The pump also allows the user to combine both flows for higher speed and volume infusion applications.



	Mode	Syringe	Rate	Target Volume/Time
P1	Infuse, Withdraw, Infuse/Withdraw, Withdraw/Infuse	Any size/type 0.5 µl - 60 ml	Any within syringe capability	Any (Mode Dependent)
P2	Same as P1	Same as P1	Same as P1	Same as P1

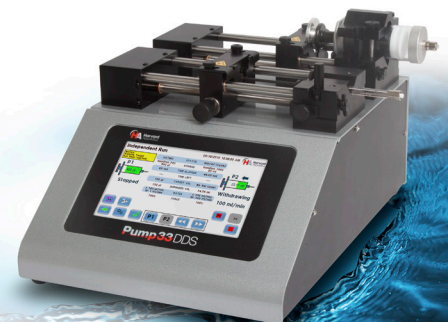
Specifications

Type	Microprocessor dual independent infuse/withdraw continuous syringe pump
Accuracy	±0.25%
Reproducibility	±0.05%
Syringe:	
Type	Glass, plastic and stainless steel
Size Minimum	0.5 µl (0.103 mm minimum inner diameter)
Size Maximum	60 ml (32.573 mm maximum inner diameter)*
Flow Rate:	
Minimum	1.02 pl/min (0.5 µl syringe, 0.103 mm inner diameter)
Maximum	106 ml/min (60 ml syringe, 32.573 mm diameter)
Display	7" color display with touch screen
Connectors:	
USB	Type B
RS-232	9-pin D-sub connector
RS-485	IEEE-1394, 6 pos for pump-pump communication
TTL Input/Output	Two 15-pin D-sub connectors, one for each pump mechanism
Footswitch	Two phonojack inputs, one for each pump mechanism
Average Linear Force	70 lbs (31.75 kg) at 100% force setting up to a flow rate of 90 ml/min using up to a 60 ml syringe with a 32.573 mm inner diameter 50 lbs (22.6 kg) at 100% force setting for flow rates 90 ml/min to 106 ml/min using the same size syringe
Power Supply	Input 100-240 VAC, 50-60 Hz, Output 30 V 1.66 A 50 W

Weight	21 lbs (9.09 kg)
Dimensions (L x D x H)	11 x 15 x 8" (28 x 39 x 21 cm)
Classification	Class I
Pollution	Degree 1
Installation	Category II
Regulatory Certifications	CE, ETL (UL & CSA), GB Scheme, EU RoHS, WEEE

*NOTE: Some larger syringes may be compatible with the Pump 33 DDS. Please contact Technical Support for more information.

Order #	Product
70-3333	Pump 33 DDS Dual Independent Syringe Pump
70-2215	Footswitch (with phone plug)



Contact us for more information



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