

## KDS Legato® 110 Infuse/Withdraw Syringe Pump



### The *NEW* Legato® 110 is the next generation of syringe pumps, ideal for multi step dosing applications and has multi-mode operation

The KDS Legato 110 single syringe pump offers infuse/withdraw flow control and programmability for up to two multi-step programs of 50 steps each. The Legato 110 has a wide flow rate range from 1.26 pl/min to 88.28 ml/min depending on syringe size. The large touch screen color display allows the user to see all of the pumps operating parameters to ensure proper operation during the experiments. Syringe size and flow rate are easily displayed as well as the volume delivered and the elapsed time. Set up is easy using the icon driven software.

The Legato 110 accommodates a single syringe from 0.5 ul to 60 ml. Any type of syringe can be used in the unit including glass, plastic or stainless steel. The pump is ideal for more complex multi-step dosing and has all multi-mode operation including infusion only, withdrawal only, infusion and withdrawal and withdrawal/infusion modes. The run screen has all of the pump parameters and running conditions. An LED light on the front panel makes it easy to see if the pump is running. Syringe size and flow rates are easily displayed as well as the volume delivered and the elapsed time.

The pumps are versatile and can be daisy chained through the RS485 interface. Advanced micro stepping techniques are employed to further reduce the step angle to eliminate flow pulsation. The accuracy is  $\pm 0.5\%$ . A wide dynamic flow range from pico liters per minute to millimeters per minute can be programmed into the pump.

KD Scientific pumps are acknowledged as the industry's highest value solution for delivering precise and smooth flow. KD Scientific is recognized worldwide for quality and reliability at an economical price and has the broadest line of syringe pumps to meet your specific application. KD Scientific is committed to delivering the highest level of customer satisfaction, as well as technical support for all their products.

**NOTE: KD Scientific syringe pumps are for laboratory use only.**

### Benefits

- Multi mode operation
- Automatic dispensing of small volumes
- Constant delivery of fluids
- Hands free operation
- Better flow performance

### Features

- Accuracy  $\pm 0.5\%$
- Holds one syringe from 0.5  $\mu$ l to 60 ml
- High resolution color touch screen
- Password protection for program configuration
- Run LED light on front panel
- Stable flow design
- Built in syringe table
- Up to 30 lbs (13.6 kg) linear force
- Built in RS-485 interface to link multiple pumps
- USB port
- I/O and TTL interface
- Footswitch Interface
- Protection with a spill dam
- CE, UL, CSA, CB Scheme, EU RoHS

### Applications

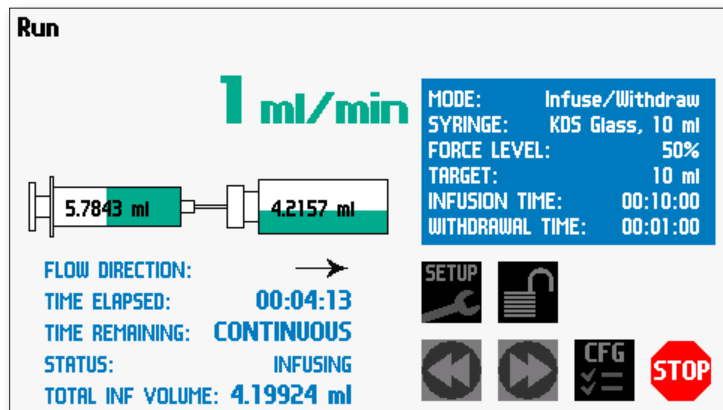
- Microfluidics
- Drug Discovery
- Nanofluidics
- Flow Cytometry
- Mass Spec Calibrant
- Organic Synthesis
- Surface Plasma Resonance

### Markets

- Pharmaceutical
- Biotech
- Chemical
- Neuroscience
- Research and Development
- Government
- Petrochemical
- Food and Beverage

## Intuitive Run Screen

Combining multiple parameters simultaneously with internationally recognizable icons allow the Legato® Series to provide a new level of intuitive syringe pump operation.



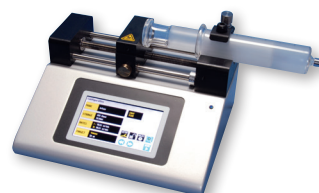
## Flow Rates

Syringe	Diameter	Minimum	Maximum
0.5 µl	0.103 mm	1.260 pl/min	1.325 µl/min
1 µl	0.146 mm	2.520 pl/min	2.651 µl/min
2 µl	0.206 mm	5.100 pl/min	5.299 µl/min
5 µl	0.343 mm	14.100 pl/min	14.690 µl/min
10 µl	0.485 mm	28.260 pl/min	29.380 µl/min
25 µl	0.729 mm	63.900 pl/min	66.370 µl/min
50 µl	1.03 mm	127.600 pl/min	132.500 µl/min
100 µl	1.457 mm	255.20 pl/min	265.100 µl/min
250 µl	2.304 mm	638.300 nl/ min	662.900 µl/min
500 µl	3.256 mm	1.275 nl/min	1.324 ml/min
1000 µl	4.608 mm	2.553 nl/min	2.652 ml/min
1 ml	4.699 mm	2.655 nl/min	2.757 ml/min
3 ml	8.585 mm	8.863 nl/min	9.204 ml/min
5 ml	11.989 mm	17.290 nl/min	17.950 ml/min
10 ml	14.427 mm	25.030 nl/min	25.990 ml/min
20 ml	19.05 mm	43.640 nl/min	45.320 ml/min
30 ml	21.59 mm	56.050 nl/min	58.210 ml/min
60 ml	26.594 mm	85.050 nl/ min	88.320 ml/min

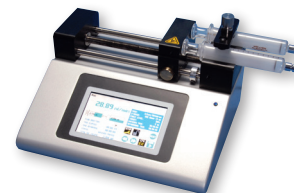
## Specifications

KDS Legato 110	
Syringe Size	0.5 µl to 60 ml
Power	100-240 VAC: 50/60 Hz, 50 W. 0.5 A fuse
Motor Drive Control	Microprocessor with 1/16 microstepping
Linear Force (Maximum)	13.6 kg (30 lbs) @ 100% Force Selection
Number of Microsteps per One Revolution of Lead Screw	15,360
Step rate (Minimum)	27.5 sec/µstep
Step rate (Maximum)	26 µsec/µstep
Drive Motor	0.9 degree Stepper Motor
Pusher Travel Rate (Minimum)	0.15 µm/min
Pusher Travel Rate (Maximum)	159 mm/min
Flow Rate (Minimum)	1.26 pl/ min (0.5 µl syringe)
Flow Rate (Maximum)	88.28 ml/min (60 ml syringe)
Dimensions	22.6 x 19.05 x 15 cm (9 x 7.5 x 5 in)
Weight	2.66 kg (5.9 lbs)
Connectors	RS485 - IEEE-1394 6 pos, USB - Type B

## KDS Legato® 100 Family of Syringe Pumps



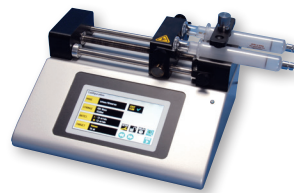
Legato 100  
Infuse Only Single Syringe



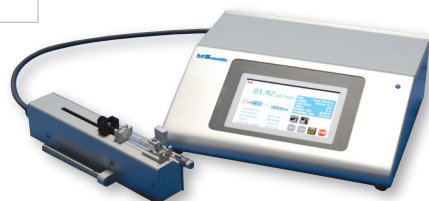
Legato 101  
Infuse Only Dual Syringe



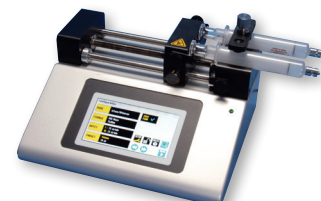
Legato 110  
Infuse/Withdraw Single Syringe



Legato 111  
Infuse/Withdraw Dual Syringe



Legato 130  
Infuse/Withdraw Remote Control Nanoliter



Legato 180  
Infuse/Withdraw Picoliter

Recommended for microfluidic applications