

Technical Spec

| | | | | |
|---|---|--|----------------------------|-----------|
| Product model | Drive unit | dLSP 501S | dLSP 501L | dLSP 501W |
| | Controller | dLSP uC | | |
| Control mode | Touch screen controller | Control 1-4 separated drive units with preset parameters through touch screen controller | | |
| | Computer | Dedicated PC control software can control 10 drive units independently | | |
| | PLC/ other controller | RS485 interface, Modbus RTU, can control 40 drive units independently | | |
| Display | 7 inch HD LCD | | | |
| Work mode | Infusion only, withdrawal only, infusion/withdrawal, withdrawal/infusion, programming (on PC software) | | | |
| Stroke of the drive unit | 70mm | 70mm | 95mm | |
| Pusher advance per microstep | 0.095um/ustep | 0.099um/ustep | 0.098um/ustep | |
| Linear speed | 0.6096um/min-182.88mm/min | 0.635um/min-190.5mm/min | 0.625um/min-143.75mm/min | |
| Linear speed resolution | 0.6096um/min | 0.635um/min | 0.625um/min | |
| Linear travel accuracy | ≤ ±0.35%(when travel ≥ 30% of the stroke) | | | |
| Linear travel CV | 0.03% (rated travel) | | | |
| Linear force (Max.) | 15N (can be set 20%-100%) | 30N (can be set 20%-100%) | 100N (can be set 20%-100%) | |
| Syringe(built-in manufacturer, or user-defined) | 0.5uL-250uL | 0.5uL-1000uL | 5uL-60mL | |
| Flow rate calibrate | Calibrate the user-defined syringe for better flow rate /dispensing volume accuracy and precision | | | |
| Parameter method | Up to 100 parameter methods can be stored on the controller, and can be imported/exported to USB flash drive | | | |
| Programming function | Parameter configured based on workflow on PC. PC method programmer: infusion, withdrawal, delay, repeat. PC control software: constant flow rate, ramp up/down, delay, repeat. | | | |
| Screen lock | Prevent misoperation | | | |
| User access control | Three levels of user access (administrator, developer, operator), each user can have an exclusive password | | | |
| Log record | Record the pump operation history, and can be exported to a USB flash drive | | | |
| Electronic signature | There are electronic signatures on the log record for FDA 21CFR Part11 compliance | | | |
| Pump state when powered up | The default state is stop, can be set to continue to run through communication commands | | | |
| Fast forward/backward | Infuse or withdraw liquid at full speed | | | |
| Controller dimensions (LxWxH) | 187mm*123mm*39mm | | | |
| Controller weight | 0.6kg | | | |
| Power supply for controller | AC 90V-260V/30W | | | |
| Drive unit dimensions (LxWxH) | 170mm*35mm*58mm | 180mm*45mm*74mm | 235mm*103mm*91mm | |
| Drive unit weight | 0.31kg | 0.51kg | 1.65kg | |
| Power supply for drive unit | DC 24V/2W | DC 24V/3.6W | DC 24V/7.5W | |

Flow rate for reference

| Syringe (uL) | Syringe ID(mm) | dLSP 501S | dLSP 501L | dLSP 501W |
|--------------|----------------|--------------------------|--------------------------|--------------------------|
| 0.5uL | 0.10 | 0.0048nL/min-1.435uL/min | 0.0050nL/min-1.495uL/min | - |
| 1uL | 0.15 | 0.0108nL/min-3.230uL/min | 0.0112nL/min-3.365uL/min | - |
| 2uL | 0.20 | 0.0191nL/min-5.742uL/min | 0.0199nL/min-5.982uL/min | - |
| 5uL | 0.35 | 0.0586nL/min-17.59uL/min | 0.0611nL/min-18.32uL/min | 0.0601nL/min-13.82uL/min |
| 10uL | 0.50 | 0.1196nL/min-35.89uL/min | 0.1246nL/min-37.39uL/min | 0.1227nL/min-28.21uL/min |
| 25uL | 0.80 | 0.3063nL/min-91.88uL/min | 0.3190nL/min-95.71uL/min | 0.3140nL/min-72.22uL/min |
| 50uL | 1.10 | 0.5790nL/min-173.7uL/min | 0.6032nL/min-180.9uL/min | 0.5937nL/min-136.5uL/min |
| 100uL | 1.46 | 1.020nL/min-306.0uL/min | 1.063nL/min-318.8uL/min | 1.046nL/min-240.5uL/min |
| 250uL | 2.30 | 2.531nL/min-759.4uL/min | 2.637nL/min-791.1uL/min | 2.595nL/min-596.9uL/min |
| 500uL | 3.25 | - | 5.265nL/min-1580uL/min | 5.182nL/min-1192uL/min |
| 1000uL | 4.61 | - | 10.594nL/min-3178uL/min | 10.43nL/min-2398uL/min |
| 2mL | 9.00 | - | - | 39.74nL/min-9.140mL/min |
| 5mL | 13.10 | - | - | 84.20nL/min-19.37mL/min |
| 10mL | 16.60 | - | - | 135.2nL/min-31.10mL/min |
| 20mL | 19.00 | - | - | 177.1nL/min-40.74mL/min |
| 30mL | 23.00 | - | - | 259.5nL/min-59.69mL/min |
| 60mL | 29.14 | - | - | 416.6nL/min-95.82mL/min |

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Flow rate can be adjusted during aspirating and dispensing

dLSP 501X Series Digital Split-type Syringe Pump

- Remote pump drive unit with compact structure and small footprint, ideal for hand-held or clamping devices
- High precision and pulseless delivery, suitable for small liquid volume transfer and handling



- 7 inch high-definition LCD touchscreen, easily constructs a multi-function system with up to 4 drive units, and each drive unit could have independent parameters.

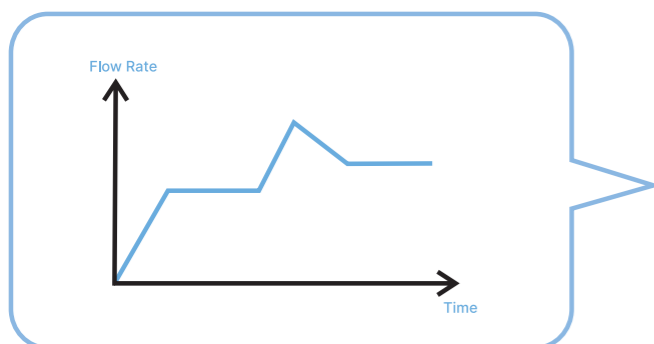


The 4-channel base provides a magnetic charging interface, easy for integrating multi-channel systems.

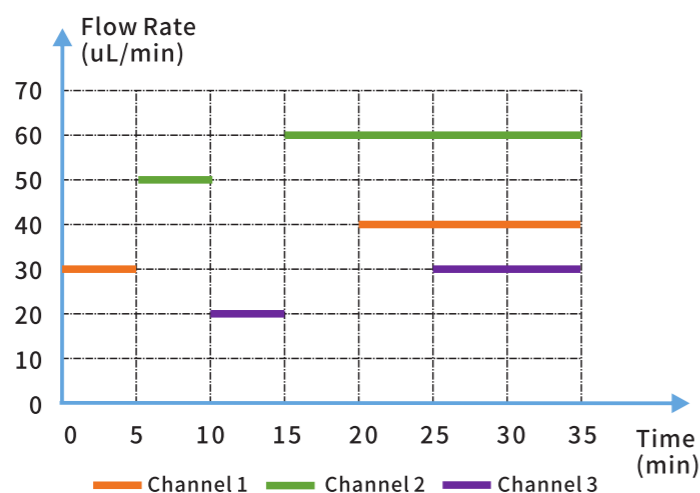


dLSP 501W could be used with 5uL-60mL syringe, achieving 0.06nL/min-95mL/min flow rate range.

- Adjust the flow rate in real-time (during aspirating and dispensing) according to the experimental conditions, improve experimental efficiency, and reduce the cost



- Multiple work modes, including infusion only, withdrawal only, infusion/ withdrawal, withdrawal/ infusion, and programmable modes, for various applications.

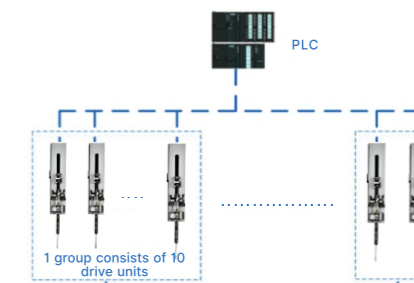


Parameters programming through dedicated PC software can achieve complex flow profiles for multiple drive units

- The computer can control the drive units through dedicated PC software. PLC or other controller can control the drive units through RS485/ Modbus RTU. Each drive unit can be controlled independently with individual parameters.



Computer Control



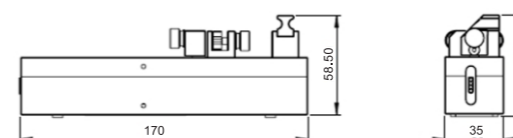
1 computer can independently control up to 4 groups

RS485 Communication Control

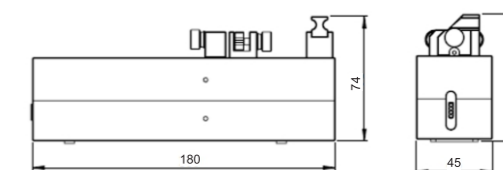
- Parameters can be saved as a method, which can be stored on the controller and imported/exported to a USB flash drive, simplifying the parameter configuration and facilitating parameter sharing between different drive units.
- Powerful features, including the lock screen function, three-level access management with password protection, log recording, and electronic signatures, ensure the safety, accuracy, and compliance of operations.

Dimension:

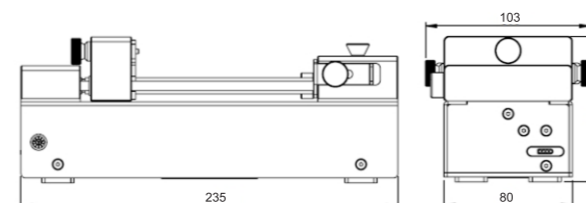
dLSP 501S



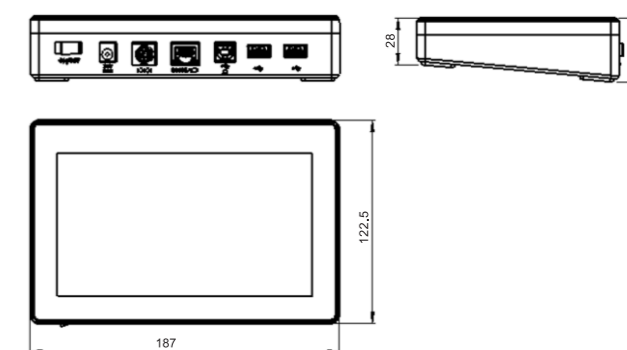
dLSP 501L



dLSP 501W



dLSP uC Controller



Extensive Applications:

- | | | |
|----------------------------------|---------------------------|-------------------|
| Electrospinning | Capillary Electrophoresis | Catalyzer |
| Microfluidics/Microfluidic Chips | Drug Discovery | Neuroscience |
| Animal Experiment | Cell Injections | Organic Synthesis |
| Toxicology Studies | Microcapsule | Nutrition Science |