

# Quick Start Guide

## dLSP 500



### Specification

	dLSP 510	dLSP 520	dLSP 510 Pro	dLSP 520 Pro
Work mode	Infusion, withdrawal, infusion/withdrawal, withdrawal/ infusion, auto repeated, programming (on dedicated PC software)			
Number of channel	1	2	1	2
Pusher advance per microstep	0.03255 $\mu$ m/ $\mu$ step		0.015625 $\mu$ m/ $\mu$ step	
Linear speed	0.0833 $\mu$ m/min-180mm/min		0.04 $\mu$ m/min-86.4mm/min	
Step speed	23.4375 sec/ $\mu$ step-10.85 $\mu$ sec/ $\mu$ step			
Flow rate of 0.5uL syringe	0.0007nL/min-0.0014mL/min		0.0003nL/min-0.0007mL/min	
Flow rate of 10mL syringe	18.028nL/min-38.956mL/min		8.657nL/min-18.699mL/min	
Flow rate of 60mL syringe(510 series)	55.554nL/min-120.044mL/min		26.677nL/min-57.621mL/min	
Linear travel accuracy (Rated)	$\pm$ 0.5%		$\pm$ 0.35%	
Linear travel CV(Rated)	$\pm$ 0.05%			
Linear force (Rated)	40lbs/18kg@100% force selection			
Motor and drive	1.8° step motor with 1/64 microstepping			
Syringe	0.5ul-60ml	0.5ul-30ml	0.5ul-60ml	0.5ul-30ml
User-defined syringe	Travel $\leq$ 108mm, OD $\leq$ 31.5mm	Travel $\leq$ 108mm, OD $\leq$ 26mm	Travel $\leq$ 108mm, OD $\leq$ 31.5mm	Travel $\leq$ 108mm, OD $\leq$ 26mm
Display	7Inch, 1024x600, IPS HD LCD			
Language	Chinese or English, set as needed			
Control mode	Tooch screen control, dedicated PC or Android App control, footswitch control, RS485 communication control			
Calibration	Improve flow rate/ dispensing volume precision and accuracy			
Real time clock	Date and time can be set			
Voice reminder	N/A		For working progress, alarm, diagnosis	
Intelligent diagnosis	N/A		For presence of syringes, syringe leakage	
Screen lock	To prevent misoperation			
Electronic signature and audit trail	N/A		Meet the requirement of 21CFR Part 11 (on dedicated PC software)	
Support 3Q(IQ/OQ/PQ)	Meet GMP requirement			
EMC	CE (TUV) certified			
Deminsion(L×W×H)	Drive unit: 260mm×185mm×180mm, Controller: 190mm×123mm×33mm			
Power supply	AC 100V-240V/30W 50/60Hz		AC 100V-240V/20W 50/60Hz	
Operating condition	Temperature: 5°C-40°C, Relative humidity<85%			
IP rating	IP31			
Weight	Drive unit: 3.49kg, Controller: 0.37kg			

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## Standard Components in Package

1

Unpacking photo



Top Layer

Bottom Layer

Note: when packing the pump, place the accessories according to the unpacking photo to prevent the damage during transportation.

2



Drive Unit

Power Cord

AC/DC Adapter

3



Dust Cover

Remove the protective film and place the dust cover on the drive unit for protection from dust and liquid

4

Paste the thicker side upward



Vertical Kit

Paste the vertical kit on the side of drive unit for vertical application

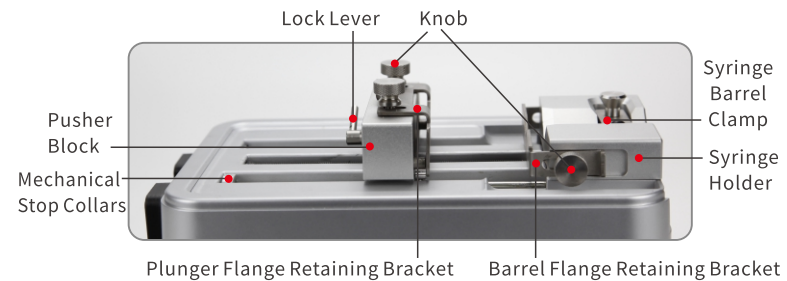
5



Touchscreen Controller

Controller Cable

## Load the Syringe



- 1) Turn the lock lever from position to position to release the pusher block from the leadscrew. Move the pusher block to the approximate length of the syringe.
- 2) Raise the syringe barrel clamp and rotate away from the syringe barrel.
- 3) Loosen the knobs of barrel flange and plunger flange retaining brackets. Place the syringe barrel on the syringe holder. Ensure the plunger flange is with in the retaining bracket and is pressed against the pusher block. Ensure the barrel flange is with in the retaining bracket and is pressed against the syringe holder.
- 4) Raise and rotate the syringe clamp, and release it to hold the syringe in place. Fasten the knobs to secure the barrel flange and plunger flange.
- 5) Turn the lock lever to position to engage pusher block.

Note: the mechanical stop collars are used to prevent excess travel of the pusher block. Release the collars using allen wrench. Move the collars along the guide rods to the proper position then tighten the collars.

## Power On



- 1) Connect the controller to drive unit using the controller cable before power on the drive unit. (The controller may crash when connected to the powered on drive unit).
- 2) Use Windows PC software to control the pump: connect the USB-B interface of the drive unit to the computer using USB A-B cable before power on the drive unit.
- 3) Use Android APP to control the pump: plug the USB-A interface of the drive unit with the WIFI/Bluetooth adapter before power on the drive unit.
- 4) Ground the pump well through the grounding rod when there is severe electromagnetic interference in the environment.
- 5) Plug the DC 24V power adapter into the power port, then power on the pump.

## Control Mode

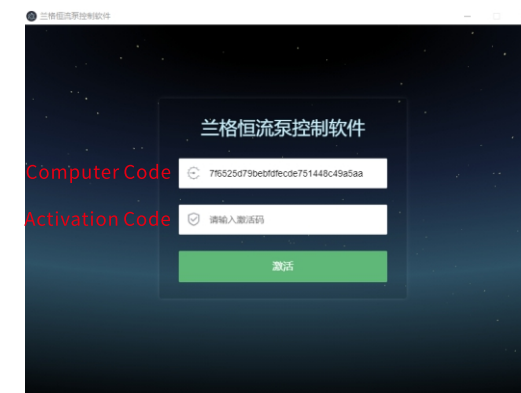
### 1) Control through Touchscreen controller (default)

Default User name: admin Default password: 123456

### 2) Control through Windows PC software

- Operating system for the PC software: Windows 7 or higher version.
- Installation location: install the software on the drive not for operating system, such as D drive or E drive.
- Register the computer and get the activation code: when run the software on an unregistered computer, the interface will provide the computer code. Scan the QR code below to provide the computer code, unique code and series number of the PC software (printed on the label) to get the activation code.

Note: the activation code only works on the registered computer.



- Install limitation: one PC software can be activated on three different computers. Please keep the unique code and series number properly.
- Default user name: admin
- Default password: 123456

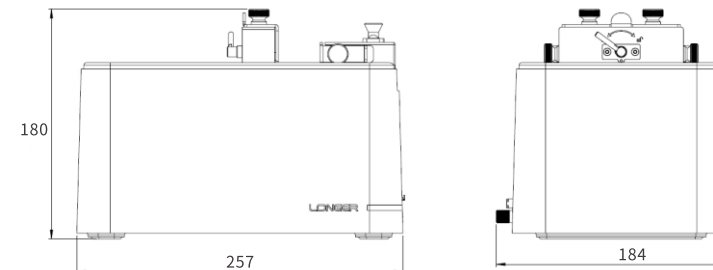
### 3) Control through Android APP

Please download the Android APP from Longer Pump website:

[www.longerpump.com](http://www.longerpump.com)

Default user name: admin

Default password: 123456



## Work Mode

### 1) Infusion

The pump infuses at the set rate and will stop when the target volume is reached. The pump can be controlled to pause, continue and stop through the touchscreen controller when it is running.

### 2) Withdrawal

The pump withdraws at the set rate and will stop when the target volume is reached. The pump can be controlled to pause, continue and stop through the touchscreen controller when it is running.

### 3) Infusion/ Withdrawal

The pump first infuses and when the target volume is reached it changes direction and withdraws. The flow rates for infusion and withdrawal can be different, but the volumes are the same (use the User-defined method for the different volumes). The interval time between infusion and withdrawal can be set.

### 4) Withdrawal/ Infusion

The pump first withdraws and when the target volume is reached it changes direction and infuses. The flow rates for withdrawal and infusion can be different, but the volumes are the same (use the User-defined method for the different volumes). The interval time between withdrawal and infusion can be set.

### 5) Auto Repeated

The pump repeats the reciprocating operation of infusion and withdrawal at set cycle number and target volume. The flow rates for infusion and withdrawal can be different, but the volumes are the same (use the User-defined method for different volumes). The interval time between cycles can be set.

### 6) Multiple-infusion

The target volume is divided into equal parts according to the number of infusions. Then multiple infusions are performed at set flow rate. The interval time between each infusion can be set.

### 7) User-defined method

User-defined method can be programmed and run on Android APP, but can not be downloaded to dLSP 500 syringe pumps.

The user-defined method can be programmed and run on Windows PC software, and can be downloaded to the U disk. Plug the U disk into the USB-A port of the drive unit to download the method to dLSP 500 syringe pumps. Then the user-defined method can be run through the touchscreen controller without PC software.

Models for program: Constant rate, Ramp rate, Loop, Delay, Repeat, I/O(out)Trigger, I/O(in)Event, Touch screen Trigger (or mouse trigger on computer).

## Software/Firmware Upgrade

Download the new version of software/ firmware into U disk. Plug the U disk into the USB-A port of the drive unit. Then power on the drive unit. Login the touchscreen controller and click System/ Upgrade to upgrade the software and firmware of the product.