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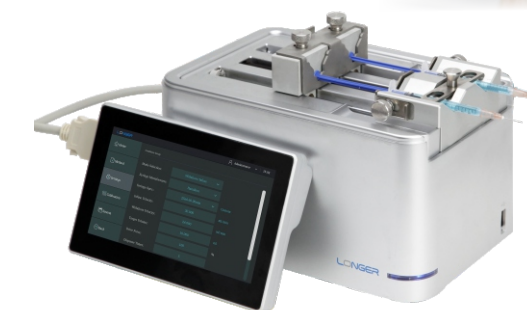
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www.longerpump.com

Specification

	dLSP 510	dLSP 520	dLSP 540*	dLSP 5A0*	dLSP 510 Pro	dLSP 520 Pro
Work mode	Infusion only, withdrawal only, infusion/withdrawal, withdrawal/ infusion, auto repeated, programming (on dedicated PC software)					
Number of channel	1	2	4	10	1	2
Pusher advance per microstep	0.03255µm/µstep			0.015625µm/µstep		
Linear speed	0.0833µm/min-180mm/min			0.04µm/min-86.4mm/min		
Step speed	23.4375 sec/µstep-10.85 µsec/µstep					
Linear travel accuracy (Rated)	±0.5%			±0.35%		
Linear travel CV(Rated)	±0.05%					
Linear force (Rated)	Rated thrust 40lbs/18kg adjustable thrust					
Motor and drive	1.8° step motor with 1/64 microstepping					
Syringe	0.5uL-60mL	0.5uL-30mL	0.5uL-20mL	0.5uL-10mL	0.5uL-60mL	0.5uL-30mL
User-defined syringe	Travel≤108mm, OD≤31.5mm	Travel≤108mm, OD≤26mm	Travel≤108mm, OD≤22mm	Travel≤108mm, OD≤18mm	Travel≤108mm, OD≤31.5mm	Travel≤108mm, OD≤26mm
Display	7 Inch, 1024x600, IPS HD LCD					
Language	Chinese or English, set as needed					
Control mode	Touch screen control, dedicated PC or Android App control, footswitch control, RS485 communication control					
Interface	RS485(optional), USB-B,USB-A,Wifi, bluetooth, Ethernet, footswitch 3 outputs- solid state relay signal, 2 inputs-switch signal or TTL signal, 4-20mA signal(optional)					
Wireless connectivity(optional)	Wifi, bluetooth					
Programming function	Parameter configured based on work flow: constant, ramp, loop, delay, repeat, I/O output trigger, I/O event input trigger, touch screen trigger					
Calibration	Improve flow rate/ dispensing volume precision and accuracy					
Parameter method	Parameter methods can be stored and easily recalled					
Real time clock	Date and time can be set					
Audible alarm	For keypad clicks, end of run, near end of run, power on, motor stall, etc.					
Voice reminder	For working progress, alarm, diagnosis					
Intelligent diagnosis	N/A			For presence of syringes, syringe leakage		
Screen lock	To prevent misoperation					
User access control	Three levels of user accesses(administrator, developer, operator), in line with safety management requirement(21CFR Part 11)					
Log record	Record the complete operation history of the pump, and can be exported directly					
Electronic signature and audit trail	Meet the requirement of 21CFR Part 11 (on dedicated PC software)					
Support 3Q(IQ/OQ/PQ)				Meet GMP requirement		
EMC	CE (TUV) certified					
Dimension(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					
Controller weight	0.4kg					
Pump drive weight	3.5kg		3.7kg	4kg		3.5kg

Quick Start Guide
dLSP 500



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 (optional) 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 (optional)

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

5



Touchscreen Controller

Controller Cable

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).

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).

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).

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

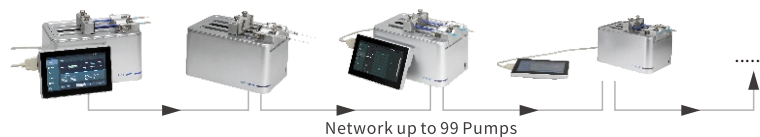
The user-defined method can be programmed and run on Windows PC software, and can be downloaded to the U disk. Plug the U disk into the USB-A port of the drive unit to download the method to dLSP 500 syringe pumps. Then the user-defined method can be run through the touchscreen controller without PC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

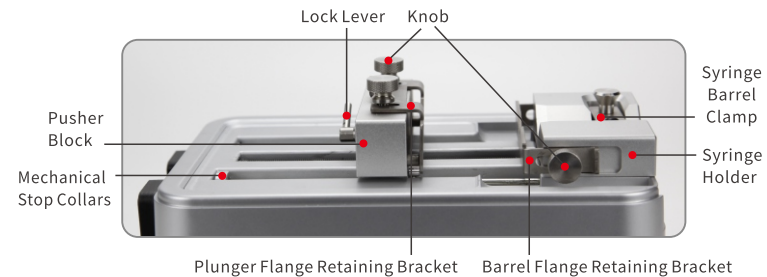
8) Multi-pump Control

Windows PC software can perform multi-pump control by linking up to 99 pumps together through the RS485 interface.

- Connect pumps through USB-RS485 adapter (optional).
- Set the pump address through touchscreen "System/Communication". The pump address should be unique under the same network.
- Control the pump through PC software.



Load the Syringe



- 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.
 - Raise the syringe barrel clamp and rotate away from the syringe barrel.
 - 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.
 - 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.
 - 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



- 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).
- 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.
- A separate Wifi/Bluetooth adapter(USB-A) is needed to control the pump through Android APP.
- Ground the pump well through the grounding rod when there is severe electromagnetic interference in the environment.
- Plug the DC 24V power adapter into the power port, then power on the pump.

Control Mode

1) Control through touchscreen controller (default)/ Android APP

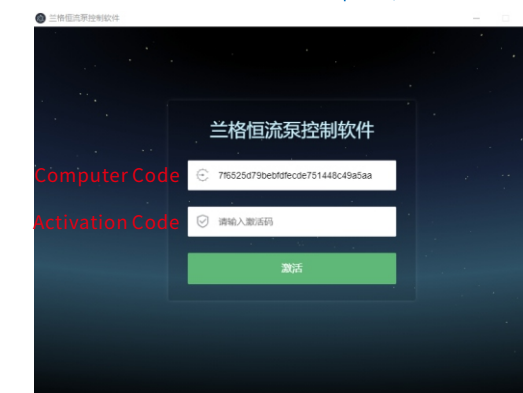
Default User name: admin Default password: 123456

2) Control through Windows PC software

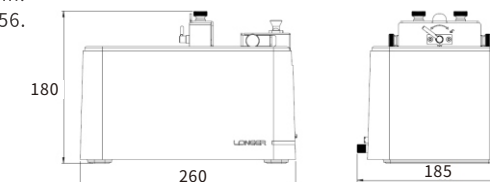
- Operating system for the PC software: Windows 7 or higher version.
- Installation location: install the software on the drive not for operating system, such as D drive or E drive.
- Register the computer and get the activation code: when run the software on an unregistered computer, the interface will 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.

The activation code needs to be kept properly. When upgrade the PC software on the same computer, the activation code is still valid.



- 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.



Upgrade

1) Product Software/Firmware Upgrade:

Download the new version of software/ firmware from Longer website 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.

2) Windows PC software and Android APP Upgrade:

Download the latest version of Windows PC software and Android APP from Longer Website: www.longerpump.com

Note: uninstall old version before upgrade the softwares.