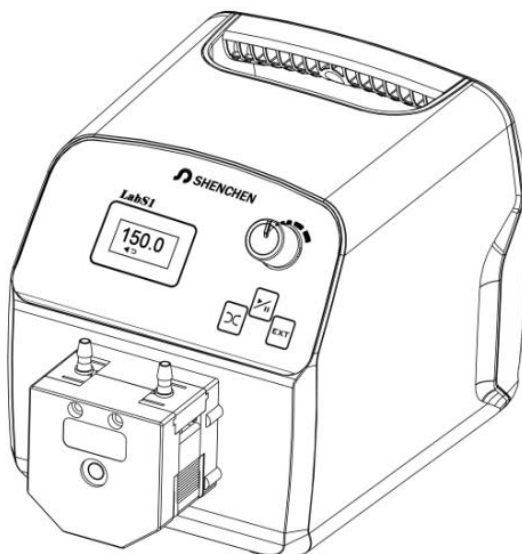


# Shenchen Precision Pump Manual of LabS/MiniPump



Baoding Shenchen Precision Pump Co.,Ltd.



### **Important Information**

- Please read the manual carefully before operating the product.



### **Warning**

- Tubing may have crack due to wear. It results in the overflow of fluid from tubing. In that time human body and instruments may be damaged. So user must check usually and change tubing in time.
- Connect directly the power line to the wall socket, and avoid using the extense electric line.
- If the power line or plug had wear and other damage, please hold the plug to unplug it, not hold the line.
- If following situations happened, please turn off the electric power and unplug the plug, holding the plug and not the line.
  1. Fluid splash on the pump.
  2. You think the pump need to maintain or amend.
- The user's power socket must have ground wire, and have reliable grounding

## Catalog

1. Product Introduction.....	-1-
2. Installation Instruction.....	-1-
3. Operation Instruction.....	-2-
3.1 Appearance.....	-2-
3.2 Screen and keypad.....	-3-
3.3 External port.....	-4-
3.4 Communication interface.....	-6-
4. Dimension Drawing .....	-6-
5.Specification.....	-7-
6. Maintenance.....	-8-
7.Warranty and After-sales Service.....	-8-

## 1. Product Introduction

LabS/MiniPump pump use stepper motor, small size and low noise. Compact and beautiful. It adopts OLED high-definition display and has external control interface for remote control. Can communicate with the computer, standard Modbus communication protocol (RTU mode), control pump operating status. Often used with a variety of analytical instruments, and won the unanimous praise of users with excellent cost performance.

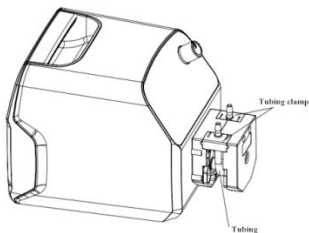
Features:

- Easy installation for pump head, stable flow rate.
- OLED high-definition display.
- Digital knob control speed.
- Power down memory function.

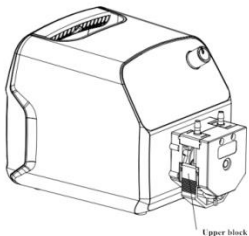
## 2. Installation Instruction

MiniPump head tubing installation and replacement.

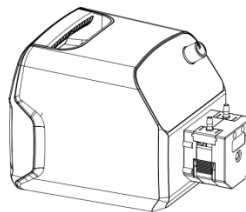
- 1) Make the two tubing clamps align the slide way of pump head two sides. Ensure that the tubing is in the middle of rollers, and push the clamps into the pump head, as below photo 1.
- 2) Make the compression block align the upper slide way of pump head as photo 2.
- 3) Press the compression block into the pump head, and ensure fixed as photo 3.



Picture 1



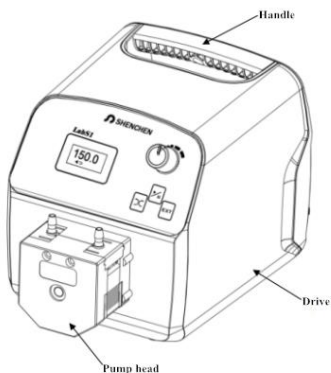
Picture 2



Picture 3

### 3. Operation Instruction

#### 3.1 Appearance



Picture 4



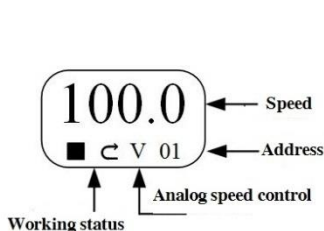
Picture 5

LabS/MiniPump peristaltic pump adopts ABS engineering plastic casing to prevent corrosion and anti-static. The back is a fan, power switch, power interface, USB interface and external control interface.

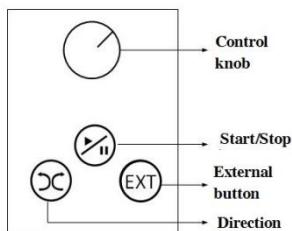
The two power connectors on the back can be cascaded with other LabS pumps and can be cascaded up to two. Cascade please select the power adapter with power supply greater than or equal to 12V/2A.

### 3.2 Screen and keypad

The LabS/MiniPump uses mechanical keypad with a life of 300,000 cycles to fully meet the needs of various environments.



Picture 6



Picture 7

- 1) Digital knob: Turn the speed control knob to the left or right to decrease or increase the speed. The speed range is 0.1-100/300 rpm.
- 2) Keep pressing the knob, motor will run at full speed at the highest speed in the current direction. The corresponding screen shows the full speed and maximum speed. Release the button to stop, the screen displays the stop state and the original speed.
- 3) Press the knob in the stop state to enter the 485 communication address adjustment. The two digits in the lower right corner of the screen flash, turn the knob left or right to decrease or increase the communication address. The address adjustment range is 1-32. After adjusting, press the knob again to exit the address adjustment state.
- 4) Start/stop button: change the motor working status. Press once, pump will start, press

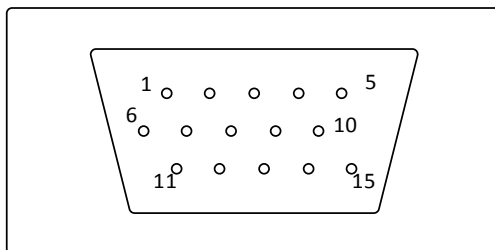
again, pump will stop.

5) External button: Change the analog speed control mode, change the button once, and the loop display is empty → V → mA → empty. Corresponding to close analog speed control→0-5V/0-10V voltage analog speed regulation→4-20mA analog speed regulation→turn off analog speed regulation.

6) Direction button: Change the running direction of the motor, change the button once, and change the running direction of the pump once.

### 3.3 External port

LabS/MiniPump external port has 15 pins. As showed in picture 8. Including external start/stop, direction changing, analog signal control speed, communicating and status output functions.



Picture 8

1) External start/stop, direction changing

1 pin with 10 pin, Short disconnect (pulse mode) for start, short connectfor stop.

2 pin with 10 pin, Short disconnect (pulse mode) to change direction.

## 2) Analog signal speed control

Press the external control button, select the voltage signal, the screen display “V”.

The voltage is 0-5V/0-10V, the 6-pin is connected to the positive pole of the analog signal voltage, and the 7-pin is connected to the negative pole. Change the voltage value of the analog signal, and the speed changes linearly. 0V corresponds to the speed of 0rpm, 5V/10V corresponds to the maximum speed.

Press the external control button, select the voltage signal, the screen display “mA”.

The current flow is 4-20 mA, the 11-pin is connected to the positive pole of the analog speed-regulating signal current of 4-20 mA, and the 7-pin is connected to the negative pole. Change the current value of the analog signal, and the speed changes linearly. 4mA corresponds to 0rpm, 20mA corresponds to the maximum speed.

### **Please Note:**

1.The voltage analog speed control pump defaults to 0-5V. If the customer needs 0-10V speed regulation, please contact Shenchen Technology Department.

2. Do not connect the 0-5V signal to the 4-20mA input. Improper connection may result in equipment damage. The external control port plug must be plugged and unplugged in the power-off state to prevent the external control interface from being burned out.

## 3) Signal output

13 pin is the output signal positive (+), 14 pin is the output signal negative (-).



13 pin is connected to the 24V positive pole, the negative pole is connected to the negative pole of the LED, and the LED positive pole is connected to the 14 pin. When the motor is in the running state, the LED is on. and the motor is stopped, the LED is off.

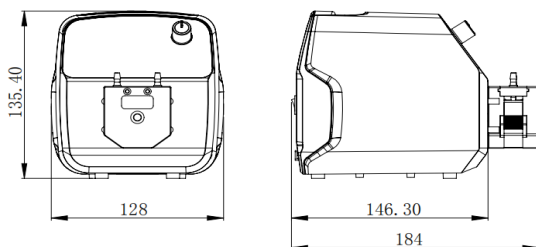
### 3.4 Communication Interface

We use standard modbus protocol (RTU mode), communication mode are 485 and USB, can control the start/stop, direction and motor speed. You can also Read the current running status.

- USB communication mode is equipped with USB cable from the factory, connected to the computer through the pump USB interface.
- RS485 communication mode is showed in picture 9. Connect the A+ pin (5 pin) together with T/R+ P pin of the RS485 module. Connect the B- pin (4 pin) together with T/R- of the RS485 module. The user can control the operation of the pump according to the content of the product agreement.

## 4. Dimension Drawing

Unit: (mm)



**5. Specification**

Model	LabS1/MiniPump LabS3/MiniPump	
Adaptor	Input: AC100-240V 50/60Hz Output: DC24V/1A	
Power	<20W	
Display	OLED screen	
Operation mode	Mechanical keypad	
Motor speed	LabS1/MiniPump: 0.1-100 RPM LabS3/MiniPump: 0.1-300 RPM	
Working environment	Temp	0-40℃
	Relative humidity	<80%
Dimension	184*128*135.4mm	
Weight	1100g	

**Flow rate range**

Pump Head Model	Housing Material	Tubing		Speed Range (rpm)	Flow Rate (mL/min)
		Tubing	ID×Wall (mm)		
MiniPump	POM	-	1×1	0.1~300	0.005~15.01
		-	2×1		0.182~54.63
		-	2.5×1		0.256~76.84
		-	3×1		0.036~108.39
		13#	0.8×1.6		0.0028~8.28
		14#	1.6×1.6		0.0113~33.88
		16#	3.1×1.6		0.038~114.31
		25#	4.8×1.6		0.063~190.00

**6. Maintenance**

- When the pump is not working, loosen the tubing, avoid the tubing get plastic deformation because of long time pressure.
- The pump head can not resist organic solvents and high corrosive liquid.
- Keep the pump head rollers clean and dry. If the rollers is not clean, it will increase the tubing wearing, shorten the tubing life and make the rollers damage very soon.
- The pump head planetary gear set need to use lubricating oil.

**7. Warranty and After-sales Service**

Products have 3 years warranty (not including tubing). In the warranty, the products are damaged because of users' wrong operation or other human damages, our company do not responsibility for warranty. Beyond the warranty, we only charge the cost of maintenance. Refer to all maintenance including in and beyond the warranty, we do not bear any freight charges because of maintenance.

MADE IN CHINA

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