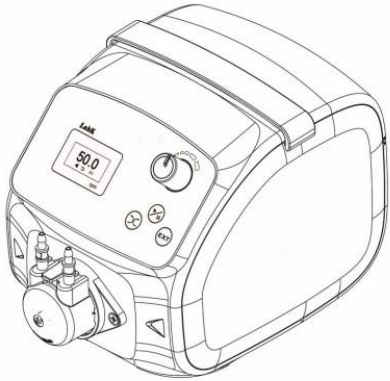
LabK Series
USER'S MANUAL



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Note:

- Please read the manual carefully before operating the product.

Warning:

- Connect the power cord to the wall socket, and avoid using electric extension cords.
- If the power cord or plug shows wear and/or other damage, please disconnect from socket by pulling the plug, not the wire and contact service.
- In the following circumstances, turn off the power supply and disconnect the plug by holding the plug itself, not the wire:

  1.Fluid has splashed onto the pump.

  2.Pump needs maintenance or repair.
- The power socket should be equipped with a ground wire and properly grounded.

Note: Ensure that the foot pedal switch and other external control plugs are connected or disconnected only when the power is off, to prevent damage.

1. Product Overview

LabK series pump are driven by step 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.

Features:

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

2. Installation Instruction

Micro-pump head installation and adjustment.

1) Put LabK series pump on the table.(show as the picture 1)
2) Take off the pump head. The pump head is already assembled when the user uses it for the first time, please do not remove the assembled roller in the pump head or pull the tube placed in the pump head.

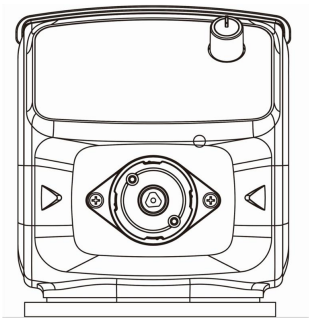
Note:

If the rollers and tubes are improperly placed, it will affect the time life of the tubes and the use of the pump. When the tube reaches the end of its life, timely replace the tube. When assembling the pump head after replacing the tube, the tube should be placed in the middle of the roller.(show as the picture 2)

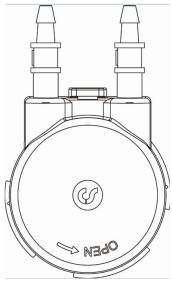
3) Install the pump head. When leaving the factory, the direction of the pump head and the rotary joint of the pump has been matched. Align the pump head tube joint direction at about 11 o'clock and gently press it into the pump head base.(show as the picture 3)
4) Rotate the tube connector clockwise to the 12 o'clock direction after pressing in.(show as the picture 4)

Note: If the direction of the pump head and the direction of the rotary joint of the pump

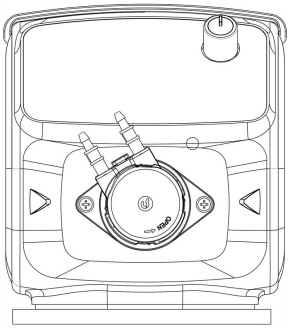
are not matched, adjust the pump speed to 20 rpm, adjust the tube joint direction of the pump head to about 11 o'clock, and slowly press it into the pump head base. The rotary joint is matched with the pump head roller bracket connection hole and rotated together to completely press the pump head into the pump head base and rotate clockwise to twelve o'clock direction.



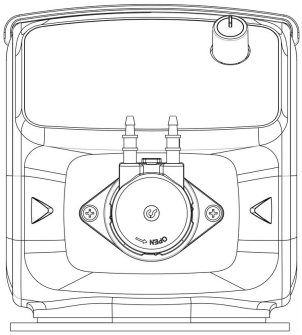
Picture 1 Original status



Picture 2 Pump head



Picture 3 Installation



Picture 4 Finished

Tube installation

1) Round the tube around the roller, before installation, the tube should be at the front end of the rollers as much as possible (Please be attention to the direction of the front and

back of the rollers holder). In this way, due to the friction between the tube and the housing, it will be more convenient to approach the middle position.

Note: The reference of the length of the tube in the shell (not exposed) is 74mm. During the installation, in order to ensure the tube kept in the middle position near the roller, it can make a corresponding mark on the tube as a reference.

2) Put the tube and the roller into the housing together, please be attention to the position of the tube, the tube should be remain in the middle position of the roller.

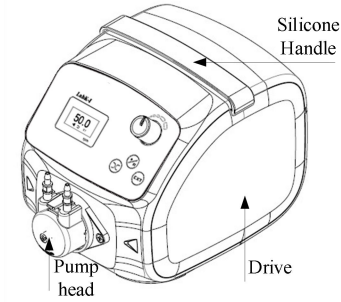
Note: If the tube is not in the middle position of the roller during the installation, users should take it off and re-operation according to the step 1.

3) Push the tube into the slideway.

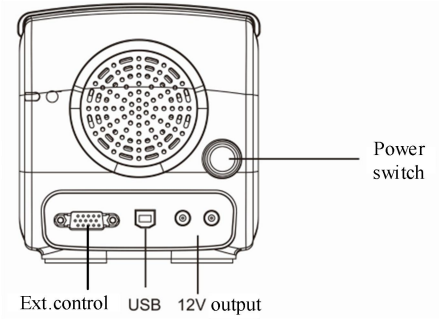
Note: The tube clamp has buckle, please take care when disassembling to avoid damage.

3. Operation Instruction

3.1 Appearance



Picture 5

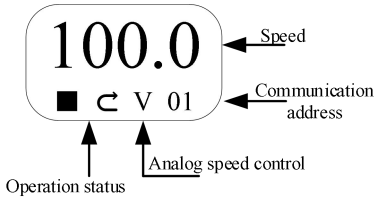


Picture 6

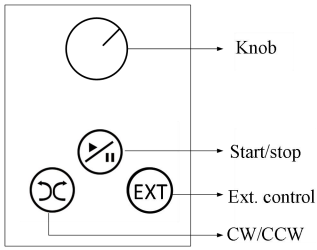
LabK series peristaltic pump adopts ABS engineering plastic casing to prevent corrosion and anti-static. The back is a fan, power switch, power interface, USB interface and external control interface.

The two power connectors on the back can be cascaded with other LabK series pumps and can be cascaded up to three. Please select the power adapter with power supply greater than or equal to 12V/3A when in cascade.

3.2 Screen and Keypad



Picture 7 Screen Instruction



Picture 8 Kepad Instruction

1) **Rotary knob**: Turn the speed control knob to the left or right to decrease or increase the speed. The speed range is 0.1-150 rpm.

   Keep pressing the knob, motor will run 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.

   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.

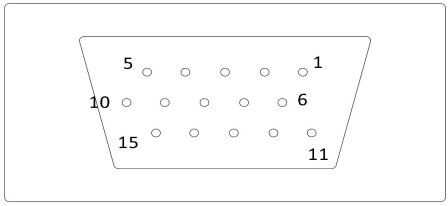
2) **Start/stop** button: Change the motor working status. Press once, pump will start working according to the setting, press again, pump will stop.

3) **External control** 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. Keep pressing the button and turn on the power supply in the same time, that will initialize the pump and all the parameters will be lost.

4) **CW/CCW** button: Change the running direction of the motor, change the button once, and change the running direction of the pump once.

3.3 External Control Port

LabK series external control interface is 15-hole interface. As showed in picture 9. Including external start/stop, direction changing, analog signal control speed, communicating and status output functions.



Picture 9 External control interface

1) (Passive) External control start/stop, direction

Pin 1 to pin 10, disconnect short circuited (pulse mode) is start, disconnect short circuited again for stop.

Pin 2 to pin 10, disconnect short circuited (pulse mode) to change direction.

Note: The factory default external control start-stop, commutation are passive signals. This interface could connect foot pedal equipped by our company.

2) (Active) External control start/stop, direction

Pin 8 connects with negative pole of active external control signal

Pin 1 connects with positive pole of active external control signal, firstly short circuited it and then disconnect, the motor will start, do it again, the motor stops.

Pin 2 connects with positive pole of active external control signal, firstly short circuited it and then disconnect, the motor will change direction, do it again, the motor changes direction again.

Note: This interface could be connected with hand-held dispenser equipped by our company.

3) 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 pin 6 is connected to the positive pole of the analog signal voltage, and the pin 7 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 0 rpm, 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 pin 11 is connected to the positive pole of the analog speed-regulating signal current of 4-20 mA, and the pin 7 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.

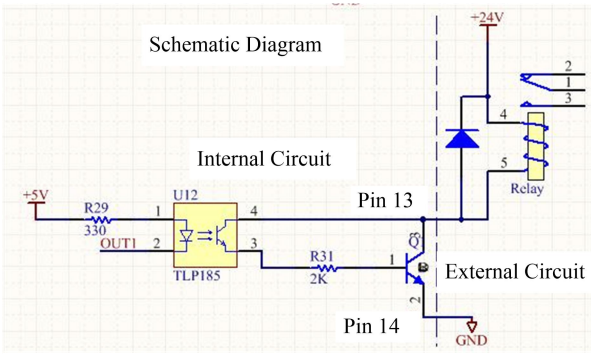
Note:

(1) The voltage analog speed control pump defaults to 0-5V. If the customer needs 0-10V speed regulation, please contact us.

(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.

4) **Signal output**

Pin13 is the output signal positive (+), Pin14 is the output signal negative (-).

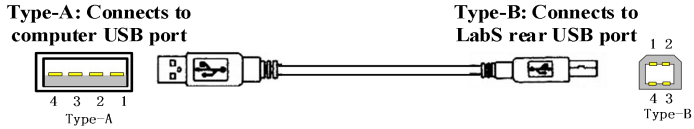


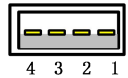
When the motor is running, if connect the relay by externally (show as the above picture), the position 1-3 of the switch is closed. When the motor stops, the position 1-3 of the switch is disconnect.

3.4 Communication Function Instruction

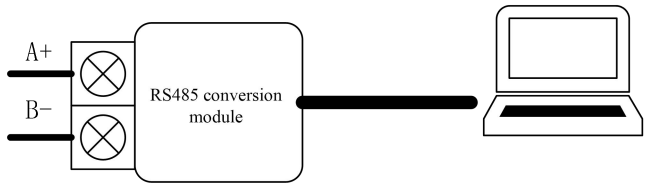
The pump support standard modbus protocol (RTUmode), communication mode are RS485 and USB. It can control the pump start/stop, direction and motor speed; also can read the current running status.

- USB communication mode need to use USB cable (one side is head A and the other side is head B) , connect the pump with computer through the USB interface.



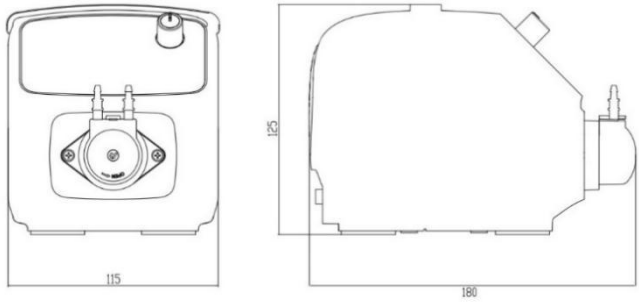
Type	Type-A	Type-B
Plug (male) USB2.0		
	Connect with computer	Connect with LabK's external control USB interface

- RS485 communication: Connect A+ (pin5) from external control interface (as shown in Picture 9) to T/R+ of RS485 module; and connect B- (pin4) to T/R- of RS485 module. Users can control the pump working according with the communication protocol.



4. Dimension Drawing

(Unit: mm)



5. Technical Specification

Model	LabK	
Adaptor	Input: AC100-240V 50/60Hz Output: DC12V/1A	
Power consumption	<12W	
Display	OLED screen	
Operation mode	Imported keypad, digital rotary knob	
Speed range	LabK:0.1-150RPM	
Working environment	Temperature	0-40℃
	Relative humidity	<80%
Dimension(L*W*H)	180*115*125mm	
Weight	800g	

Pump head flow rate

Pump Head	Speed Range (rpm)	Tube (ID×WT)	Flow Range (mL/min)	Maximum Pressure (Mpa)		Material	
				Intermittent	Continuous	Base	Housing
Micropump	0.1~150	1×1	0.004~6.38	0.1	0.1	POM	PC
		2×1	0.014~21.45				
		3×1	0.031~47.26				
		4×1	0.042~63.96				

6. Maintenance

- Verify the pump current operational status before turning on power. Operate only under normal conditions.
- Inspect for fluid leakage and promptly address any potential faults.
- Clean any spilled liquid around the pump promptly.
- If liquid splashes on the pump, turn off and unplug the power supply, check for internal leakage, and contact the manufacturer if liquid has entered the equipment
- Ensure that the foot pedal switch and other external control plugs are connected or disconnected only when the power is off, to prevent damage.
- The power socket should be equipped with a ground wire and properly grounded.
- This product is not designed to be waterproof. Operators are advised to implement appropriate protective measures when operating in wet environments.
- This product is not equipped with special certifications, such as medical certification. For applications in specialized fields like medical or military, users are responsible for conducting their own certification/validation.
- If the product will not be used for an extended period of time, please clean it thoroughly and store it in a dry, well-ventilated area.
- The company is not liable for any losses resulting from product malfunctions or misuse of the product.