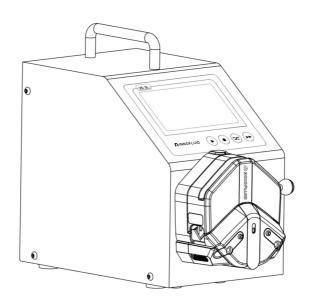
V6 Series Manual







Note:

Please read the manual carefully before operating the product.



Warning:

- > Tubing may crack due to wear. This can cause fluid to leak from the tubing. In that case, personnel and equipment may be harmed. Users must inspect the tubing regularly and replace it in time.
- Connect the power cord directly to a wall outlet, and avoid using extension cords.
- > If the power cord or plug had wear and other damage, please disconnect the plug. (Hold the plug instead of the wire)
- ➤ If the power cord or plug shows signs of wear or damage, unplug the unit (hold the plug—do not pull the cord).
 - 1. Fluid splashes onto the pump.
 - 2. You believe the pump requires maintainance or repair.
- > The user's power outlet must be properly grounded.

Note: The foot pedal switch and other external control plugs must be connected or disconnected while the pump is powered off, to prevent damage to the external control interface.

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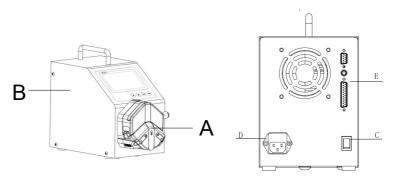
1. Product Introduction

V6 series products are intelligent, flow-measurement peristaltic pumps with a 4.3-inch color touchscreen control. On-screen animations show the operating status. Flow data, setting parameters, and system settings are displayed on the same screen. With intelligent calibration and on-line micro adjusting function, three kinds of measurement modes: Fixed volume measurement; fixed time and volume, timer start/stop. This product can load different pump heads, multiple external methods are optional. It is ideal choice for laboratory, equipment supporting and industrial production.

V6 series include many product types: V6-3L, V6-6L, V6-12L.

Suitable for many pump heads: EasyPump pump head, YZ1515x, YZ2515x; DZ25-3L, DZ25-6L, DY15, DY25, YZ35, KD pump head.

2. Product Appearance



A—Pump Head

B----Drive

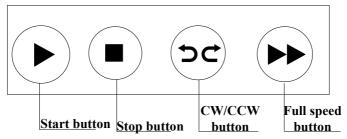
C-Power Switch

D-Power Socket

E-External Control Interface

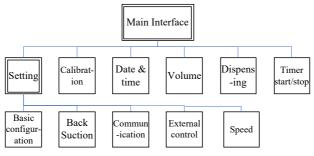


3. Keyboard Instruction



- Start Button: Press this button, the motor starts running. When fixed volume
 measurement function or fixed time and volume function are turned on, press
 this button, the pump will start work with the function.
- **Stop Button**: Press stop button, pump stops working. Forbidden buttons can be used on the main interface. Keep pressing the button and turn on the pump power supply, that will initialize the pump, and all the parameters will be lost.
- CW/CCW Button: Press this button one time, the motor will change rotation direction. When the pump is working with fixed volume measurement function or fixed time and volume function, this button is disabled.
- Full Speed Button: When in stop state or transferring state, press this button, the pump will run with full speed. T This function can be used for tubing rinse or fast liquid filling.

4. Operation Interface Structure



V6 Series Operation Interface Instruction

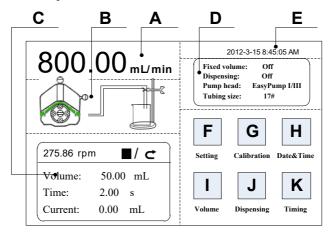


4.1 Boot Screen

After powering on, the system enters the boot screen. Click anywhere, or wait for 2.5 seconds, and it will automatically enter the English main operation interface.

4.2 Main Interface

Main interface composition as below:



- **A. Speed/Flow Rate Display:** In Flow Rate mode, the current flow rate is displayed, and the motor speed is displayed in frame C. In Speed mode, the current set speed is displayed, and the flow rate is displayed in frame C. Tap A to edit the flow rate or speed. When the Fixed Time and Volume function is enabled, A is disabled and the flow rate or speed cannot be edited.
- **B. Real-time Dynamic Display:** Displays the current running status in real time, with dynamic animation of the running results.
- **C. Real-time Parameter Display:** Displays the current operating status and set parameters. When the fixed volume measurement is enabled, it displays the fixed volume measurement parameters; when the fixed time and volume function is enabled, it displays the fixed time and volume parameter. When both functions are disabled, the displayed parameters are all 0.
- D. Setting Parameter Display: Display the fixed volume measurement, fixed time

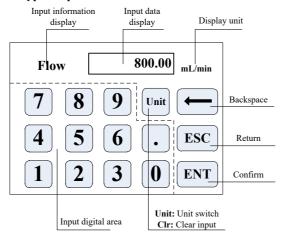




and volume state information, the pump head model and tubing size.

- **E. Date and Time Display:** Display the current date and time, you can change it in the date & time interface. When an alarm clock icon appears on the right, the Timer Start/Stop function is enabled.
- F. System Settings Button: Tap to set other parameters.
- G. Flow Calibration Button: Tap to enter the flow rate calibration interface.
- H. Date & Time Button: Tap to enter the date and time setting interface.
- **I. Fixed Volume Measurement Button:** Tap to enter the fixed volume measurement interface.
- **J. Fixed Time and Volume Button:** Tap to enter the fixed time and volume interface.
- **K.** Timer Start/Stop Button: Tap to enter the timer start and stop interface.

4.3 Numeric Keypad Input Interface



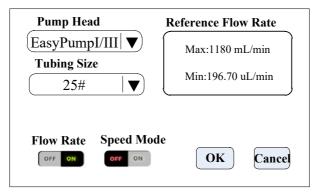
- Input Information Display: Shows the current input item.
- **Input Data Display**: Shows the current input data, range is 0.01-9999.
- Unit Display: Shows the unit when entering flow rate or volume.



- Input Digital Area: Numeric keypad.
- Unit/Clr Button: When input flow rate or volume, this button is unit switch, you can choose different units. When it is Clr, you can clear the current input data.
- Backspace Button: Deletes the last entered digit.
- ESC Button: Cancels the current input and returns to the previous interface.
- ENT Button: Confirms the current input.

4.4 The Basic Configuration Interface

The basic configuration interface:



Tap the pump head and tubing size to choose the pump head and tubing.

Reference flow rate displays the maximum and minimum flow rate with the current pump head and tubing.

Click the Flow rate mode or Speed mode button to choose the working mode. When you choose the flow rate mode, the flow rate is adjustable, the speed will change with the flow rate. When you choose the rotation speed mode, the speed is adjustable, the flow rate will change with the rotating speed.

Click the confirm button when you have finished choosing parameter then back to the main interface.

Note that: When the pump is fitted with two pump heads and the outputs of both





pump heads are connected to one channel, you must select the 2* pump head model. In other cases, select a single pump head model.

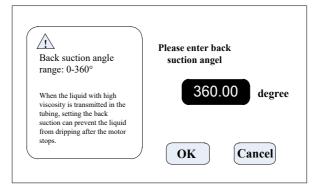
For example, if the pump is fitted with two EasyPumpI heads and both outputs are connected to one channel, select 2*EasyPump I, as shown below:

In other cases, such as one EasyPumpI head, or two EasyPumpI heads used as two channels, or three or four EasyPumpI heads, select the single EasyPumpI pump head, as shown below:



4.5 Back Suction Angle Interface

The back suction angle interface is as below:

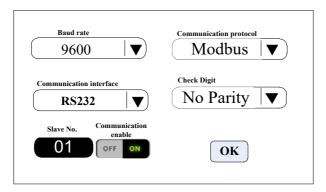


Click the **System Settings** button in the main interface, then click **Back suction** button to enter the back suction angle setting interface. Click **angle** button, pop up the numeric keyboard for inputting the suction angle, enter back suction angle then click **OK**. If click the **Cancel** button, it will go back to the system settings main interface.

4.6 Communication Setting Interface

The communication setting interface as the following picture shows





Click **System Settings** button in the main interface, then click **Communication** button to enter communication settings interface.

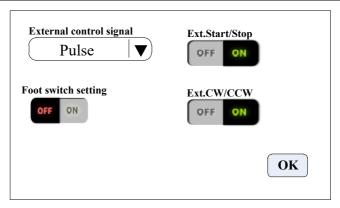
This pump support MODBUS——RTU Mode. Please select baud rates and communication interface (RS485/RS232). Click **Slave No.** button to enter peristaltic pump address No. (range:1-32), select communication enable is **ON**. Then this pump can communicate with master, receiving master signal.

NOTE: Peristaltic pump only receives communication control when in the main interface, it's out of communication control when in another interface.

4.7 External Control Setting Interface

External Control Setting Interface as below:





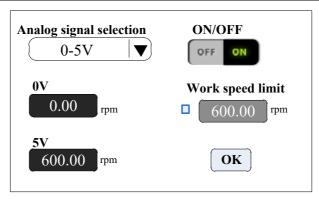
Click **System Settings** button in the main interface, then click **External control** to enter **External Settings** interface.

- There are two types of signals for external control motor start/stop and direction: Level mode and Pulse mode. Connection interface refers to the external control interface instruction.
- Various external control modes are independently set on switches, which will only work after the corresponding external control function is turned on.

4.8 External Control Speed Setting Interface

External control speed as the following picture shows





Click **System Settings** button in the main interface, then click **External Speed Control** button to enter external speed control settings interface.

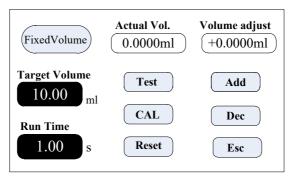
According to external input signal, set the analog signal to **0-5V**, **0-10V** or **4-20mA**. Between analog signal voltage range and motor speed, there is linear relationship. (when the working speed limit is off).

After turning on the maximum working speed limit, the motor speed will be limited. For example: if 0V to 0rpm, 5V to 600rpm (then 2.5V should be 300rpm). But if the maximum working speed limit is 300rpm, when external input signal is 2.5V, the motor speed will be 300 rpm. The input signal over 2.5V, the motor speed maximum is 300rpm.

4.9 Flow Rate Calibration Interface

Flow Rate Calibration Interface as below:





The top left corner displays the function, when fixed volume measurement turn on, display fixed volume; when fixed time and volume turn on, display fixed time and volume. Others display transferring mode.

If fixed time and volume turn on, the target volume and running time is set up parameter, unable to amend. Other modes, the running time is 60s, you can click the run time button to amend the running time.

Before the pump works, you need to calibrate the flow rate to ensure the transferring or dispensing accuracy

Process as below:

- (1) Confirm the running time, if fixed time and volume function, the running time is set up time, unable to change.
- (2) Click Test button to test, the run time displays with countdown, it will stop automatically, and display numerical keyboard, input the actual volume, then it will ask whether continue test (suggest more than 3 times), choose Yes, the pump will test again, choose No, back to the calibration interface.
- (3) After clicking the Test button, during the pump running, you can click the Stop button to stop the test.
- (4) After several tests, the actual volume area displays the average data, click the CAL button, prompt the calibration is successful.
- (5) If request higher accuracy, you can click **Add** and **Dec** button to micro adjust the flow rate, to reach high accuracy transferring and dispensing.





(6) Click **Reset** button, recover to the default parameter of leaving factory.

Online Micro Adjust Volume Process:

Flow Rate Transferring Mode: If the actual flow rate during production is higher or lower than the set flow rate, you can micro adjust the flow rate online without affecting the product line.

Fixed Time and Volume Mode: If the dispensing volume is higher or lower than the set volume, you can micro adjust the volume online, no need to stop the pump.

Fixed Volume Measurement Mode: Do not support online micro adjust function.

- Click the Calibration button from the main interface, enter the flow rate calibration interface.
- Now only the Add, Dec and Esc button is usable, other buttons are forbidden.
- Click Add or Dec button to micro adjust the flow rate or volume.

4.10 Date & Time Interface

Click the top right corner of time display, it will occur the Setting Date & Time Interface as below:



Click the **System Settings** button from the main interface, click **Date** & **Time** button, enter date and time setting interface. The date and time will be displayed



on the top right corner of main interface.

Click **Set Date** button, come out the **Set year** numeric keypad, the range of the year is **1970-2099**. After setting up the year, then set the month and date.

Click **Set Time** button, comes out the numeric keypad, set the hour, minute and second.

4.11 Fixed Volume Measurement Interface

Fixed Volume Measurement Interface as below:

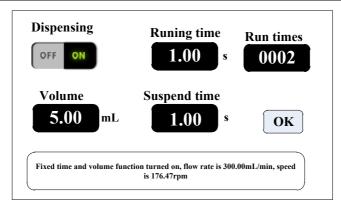


After turning on this function, the peristaltic pump will measure the volume automatically, when the volume reaches set up volume, the pump will stop working automatically. The flow rate can be changed during the pump working.

Click the **Fixed Volume** button, set **ON** to turn on this function. Click **Set Volume**; to input volume, the unit can be mL or L, range is 0.01mL to 9999L. The prompting frame displays the needed time to finish the volume with set up flow rate. The maximum time is 9999min, when more than 9999min, the system will warn.

4.12 Fixed Time and Volume Interface





After turning on this function, the pump will enter dispensing mode.

Peristaltic pump transfer fixed volume in fixed time, transfer number of times is the run times, click suspend time button then input suspend time, prompt box display current diameter, after click the OK button, click the start button, the pump begins dispensing according to the parameters.

4.13 Timer Start and Stop Interface



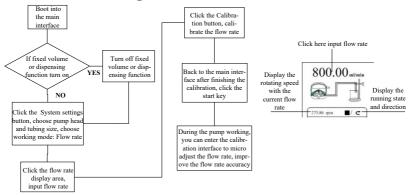
This function can freely set pump to start and stop. After the current time reaches the set time, it will automatically start or stop the motor.

When the Fixed volume measurement or fixed time and volume function is turned on, the timer stop function is disabled.



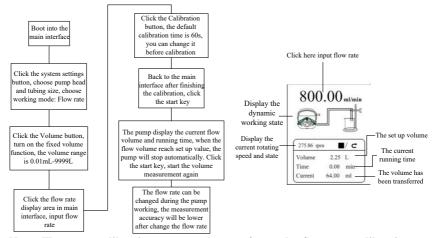
5. Main Functions Operation Process

5.1 Flow Rate Transferring Function



Note: Flow rate calibration process please refer the flow rate calibration interface instruction.

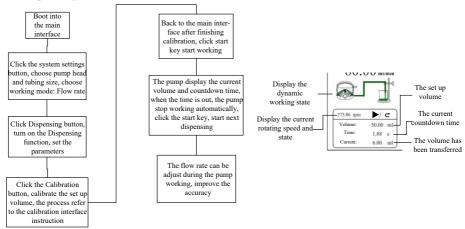
5.2 Fixed Volume Measurement Function



Note: Flow rate calibration process please refer to the flow rate calibration interface instruction.

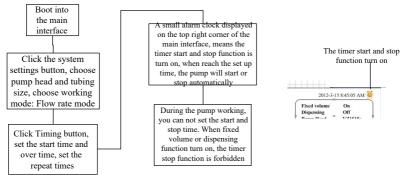


5.3 Dispensing



Note: Flow rate calibration process please refer to the flow rate calibration interface instruction.

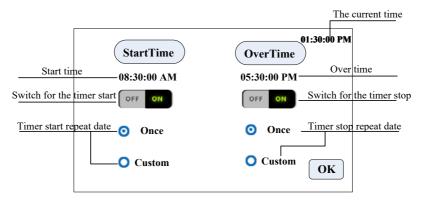
5.4 Timer Start and Stop Function



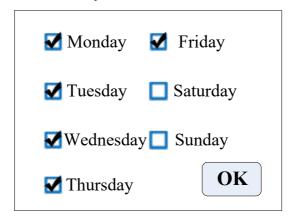




Under the flow rate transferring mode, set the pump start at 8:30 a.m. from Monday to Friday, stop at 5:30 p.m., the process as below:



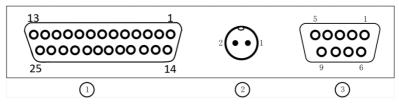
Click **Start Time**, set the start time is 8:30 a.m., turn the button to **ON**. Click **Custom**, come out the repeat date window, as below:



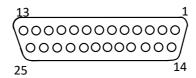


6. External Control Interface Instruction

External control interface is as shown below



① DB25 external control connector instruction



Pin	Pin Definition	Explanation	Note	
1	0-5V	0V to 5V voltage signal input terminal		
2	0-10V	0V to 10V voltage signal input terminal	A 1	
3	4-20mA	4-20mA current signal input terminal	Analog signal input terminal	
4	I_/V_	Analog signal negative terminal		
5	/	1	1	
6	R/S1	External control start/stop signal with passive signal input	The passive switch or foot pedal switch can be connected with the terminal. Set the validity of this input in external setting interface-foot pedal option.	
7	R/S2	External start/stop signal input	Active signal 5-24VDC input	
8	NC	External full speed signal input	Active signal 5-24VDC input	
9	CW/CCW	External direction signal input	Active signal 5-24VDC input	

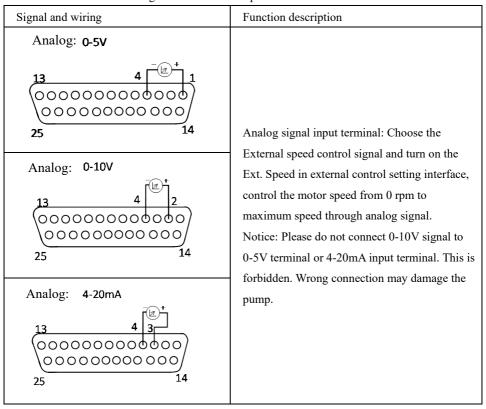


V6 Series

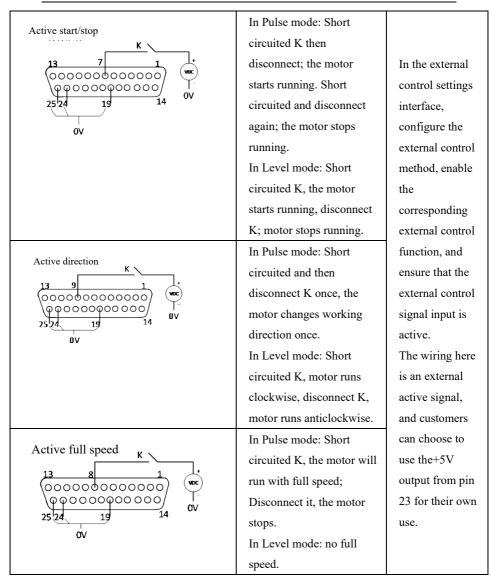
10	/	/	/	
11	/	/	/	
12	/	/	/	
13	/	/	/	
14	/	/	/	
15	/	/	/	
16	OUT1	Operating status output terminal 1	Open collector output	
17	OUT2	Operating status output terminal 2	/	
18	COM	Provides valtage for legie outputs	External power supply	
10	8 COM Provides voltage for logic outputs	negative		
19	GD2	Connected to the internal GD1	1	
20	/	/	/	
21	/	/	/	
22	/	/	/	
23	+5V	Internal 5V output positive terminal		
24	GD1	Internal 5V output negative terminal Internal 5V output		
25	0V	Connected internally to GD1 and GD2		



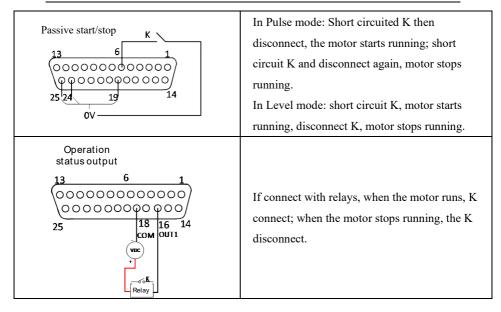
External control wiring and function description











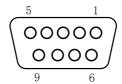
② XS6 Connector



Pin	Pin Definition	Explanation	Note
1	R/S1		The passive switch or foot pedal
		External control start/stop signal with passive signal input	switch can be connected with the
			terminal. Set the validity of this
			input in external setting
			interface-foot pedal option.
2	GD1	Internal 5V output negative	/
		terminal	



③ DB9 Connector



Pin	Pin Definition	Explanation	Note
1	/	/	/
2	RS232-TXD	Signal transmitted by peristaltic	Choose RS232 in the
		pump, received by upper computer	Communication setting
3	RS232-RXD	Signal received by peristaltic pump,	interface, this terminal
		transmitted by upper computer	is active.
4	/	/	/
5	GND	Communication ground port	
6	/	/	/
7	GND1	RS485 signal ground	
8	RS485-B	Connect RS485 B- terminal	Choose RS485 in the
9	RS485-A	Connect RS485 A+ terminal	communication setting
			interface, this terminal
			is active.



Communication wiring and function description

Signal and wiring		Function description
RS232 communication interface GND 5 3 2 O O O O 9 6	GND 5 TXD 3 RXD 2 1 Computer port	RS232 communication interface: Choose RS232 in the communication setting interface, this terminal is active.
RS485 Communication interface 5 1 OOOO 9 8 6 RS485 -B RS485 -A	RS485 interface B-A+	RS485 Communication Interface: Choose RS485 in the Communication setting interface, this terminal is active.



7. Technical Specification

7. Technical Specification				
Flow rate resolution	0.01mL/min	Power supply	AC220V±10% 50Hz/60Hz (standard) AC110V±10% 50Hz/60Hz (optional)	
Operation mode	Touch screen and mechanical keypad	External control speed	0-5V, 0-10V, 4-20mA for option	
External control	Passi	ve switch signal: foot pedal		
mode	Active switch signal: 5-24V universal			
Temperature	0-40°C	Relative humidity	<80%	
Communication interface	RS232/RS485	Output Interface	Output motor working status (open-collector-output)	
Back suction angle	0-360°	Protection IP31		
Speed range	V6-3L/V6-6L/V6-12L	0.1-600rpm		
D	V6-3L	<80W		
Power	V6-6L	<180W		
consumption	V6-12L	<300W		
Motor type	V6-3L/V6-6L/V6-12L	Closed-loop stepper motor		



8. Main Functions and Features

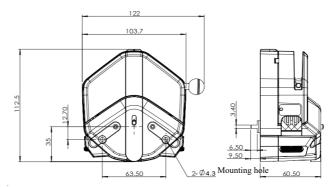
- 8.1 4.3-inch color touch screen control, animation shows working state, the flow volume and motor speed are displayed in the same screen.
- 8.2 Intelligent calibration function, it can calibrate the flow rate and dispensing volume, ensure the flow accuracy, suitable for high accuracy transferring liquid.
- 8.3 On-line micro adjusting function, it can adjust the flow rate during production progress, to avoid the filling errors because of tubing fatigue and elasticity decreased.
- 8.4 Accurate angle control technology, reaches high precision dispensing and measurement.
- 8.5 Fixed volume measurement function: After turning on this function, the peristaltic pump will measure the liquid volume automatically, it will stop automatically after the volume reaches the set value. During this process, the flow rate can be changed. It is suitable for liquid metering in the laboratory or quantitative feeding in the chemical reaction process, etc.
- 8.6 Fixed time and volume function: After turning on this function, the peristaltic pump will transfer fixed volume within set time. It is suitable for liquid dispensing in laboratory and industrial production.
- 8.7 Timer start/stop function: Can set the pump start and stop time freely, reach automation control.
- 8.8 Power down memory function, store the running parameters in time, safe and reliable.
- 8.9 Fast fluid-filling function can wash the tubing and fill liquid into tubing.
- 8.10 High torque and low power loss, it can load several pump heads or multichannel pump head, meet different application requests.
- 8.11 External control of start/stop is convenient for equipment supporting.
- 8.12 304 stainless-steel shell, anti-corrosion, in line with industrial requirements. Anti-interference can shield the interference signal.



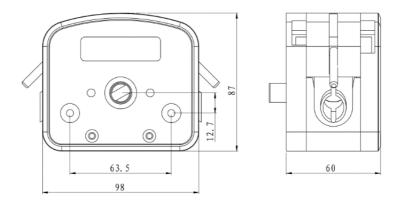
9. Dimension Drawing

Unit: (mm)

9.1 Single pump head

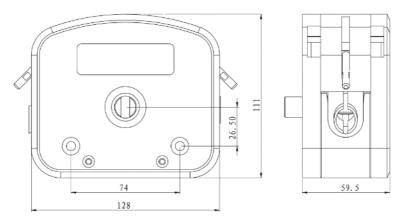


EasyPump Head

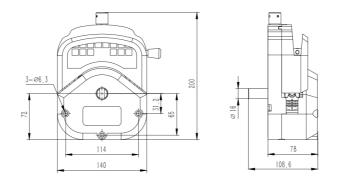


DZ25-3L Pump Head



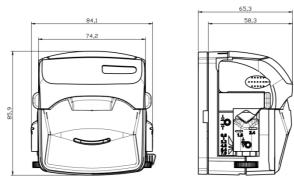


DZ25-6L Pump Head



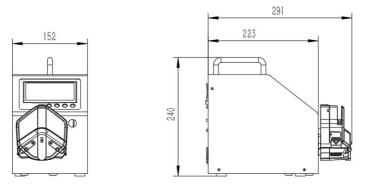
YZ35 Pump Head





KD Pump Head

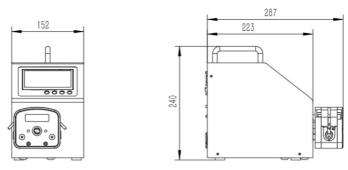
9.2 V6 series product



V6-3L series + EasyPump Pump Head

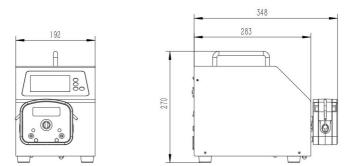
Note: For each additional pump head in series, the longitudinal dimension shall be increased by 61mm.





V6-3L Series+DZ25-3L Pump Head

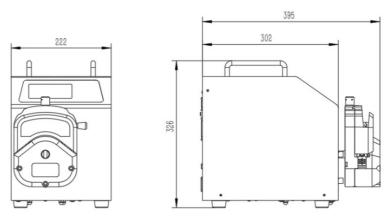
Note: For each additional pump head in series, the longitudinal dimension shall be increased by 60mm.



V6-6L Series+DZ25-6L Pump Head

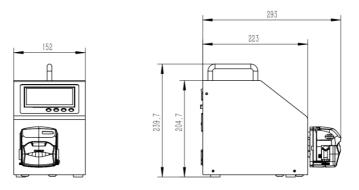
Note: For each additional pump head in series, the longitudinal dimension shall be increased by 60mm.





V6-12L Series +YZ35 Pump Head

Note: For each additional pump head in series, the longitudinal dimension shall be increased by 78mm.



V6-3L+KD pump head

Note: For each additional pump head in series, the longitudinal dimension shall be increased by 63mm..



10. Maintenance

- > Check the running status of machine before starting it, normal operation can be put into use.
- ➤ Check for leakage, and correct fault if it appears.
- > Clean liquid overflowed from the pump in time.
- Please turn off the power supply and unplug the power socket (Hold the socket instead of power cord) when liquid splashed on pump. Check whether liquid flows into the machine, if it does, please contact the manufacturer.
- > The foot pedal switch and other external control plugs must be connected or disconnected in the power-off status to prevent the external control interface from being burned.
- The user's power socket must have ground wire and have reliable grounding.
- This product has no waterproof measures. Please take protective measures when using in water environment.
- This product does not have special certification such as medical certification. When it needs to be used in special fields such as medical and military, please self-certify.
- ➤ If the pump is not used for a long time, please clean it and keep it in dry and ventilated environment.
- > The company shall not bear the direct and indirect losses caused by the malfunction or improper operation of this product.



11. Warranty and After-sales Service

We support 3 years warranty for the pumps, subject to the exceptions below. Our company shall not be liable for any loss, damage, or expense directly or indirectly related to or arising out of the use of its products. This warranty does not obligate our company to bear any costs of removal, installation, transportation, or other charges which may arise in connection with a warranty claim.

If the pump fails during the warranty period, after confirmation by our technical department, we will provide spare parts free of charge. Customers will need to bear the shipping cost.

Exceptions:

- > The warranty shall not apply to repairs or service necessitated by normal wear and tear or for lack of reasonable and proper maintenance.
- All tubing and pumping accessories as consumable items are excluded.
- Electrical surge as a cause of failure is excluded.
- > Chemical attack is excluded.
- > Improper operation or man-made damage as a cause of failure is excluded.

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