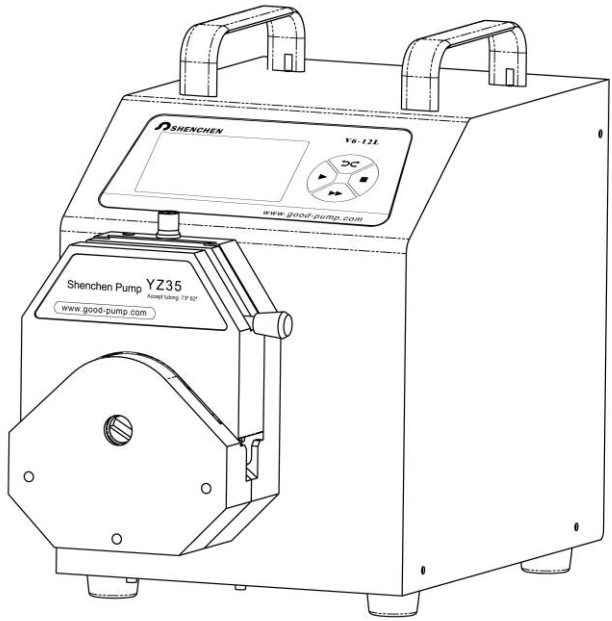
Shenchen Peristaltic Pump
Manual of V6-12L Series



Baoding Shenchen Precision Pump Co.,Ltd.

Important Information

- Please read the manual carefully before operating the product.

Warning

- Tubing may have cracks due to wear. It results in the overflow of fluid from tubing. In that time human body and instruments may be damaged. Therefor user must check frequently and change tubing in time.
- Connect the power line directly to the wall socket and avoid using as extension electric cable.
- If the power line or plug have wear and other damage, please hold the plug to unplug it, do not hold the line.
- If following situations happens, 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 needs to be maintained or amended.
- The users power socket must have ground wire, and have reliable grounding.

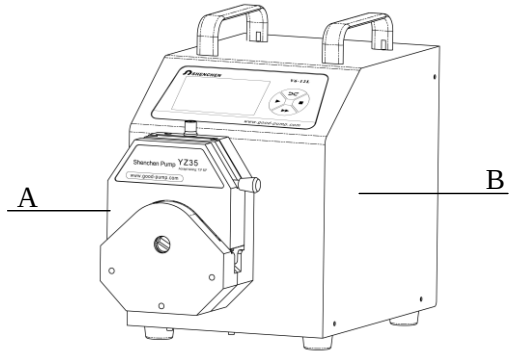
Catalogue

V6-12L Series Product Introduction

4.3-inch color touch screen control; dynamic display of working status; flow data, set parameters and system settings displays in the same screen. Intelligent calibration and online micro adjusting function; three measurement modes; fixed volume measurement, fixed time and volume, timed start and stop.

It can load YZ35 pump head. It is the ideal choice for industrial production and equipment supporting.

V6-12L Series Product Appearance



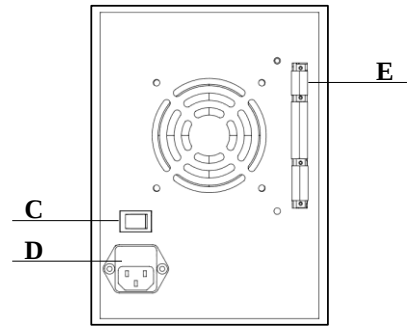
A - Pump Head

B - Drive

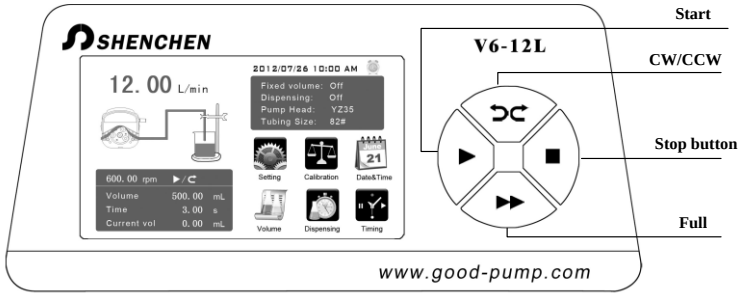
C - Power Switch

D - Power Port

E - External Control Input Port



V6-12L Series Keyboard Instruction



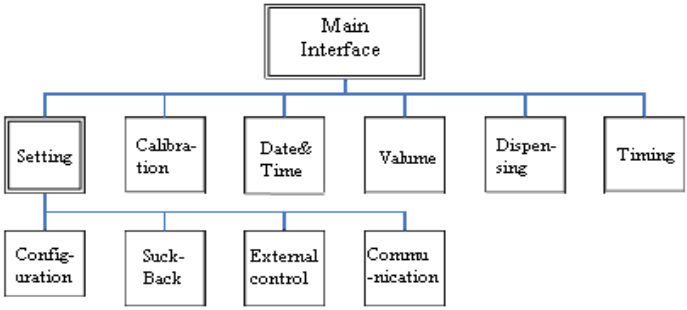
Stop Button: Press stop button, stop working. Forbidden buttons can be used on the main interface.

Full Speed Button: When in stopped state or transferring state, press this button, the pump will run with highest speed. This button can be used for washing the tube or filling liquid fast.

CW/CCW Button: Press this button, the motor will change running direction. When the is pump working with fixed volume measurement function or fixed time and volume function, this button does not work.

Start Button: Press this button, the motor starts running. When fixed volume measurement function or fixed time and volume function turn on, press this button, the pump will start work with the function.

V6-12L Series Operation Interface Structure



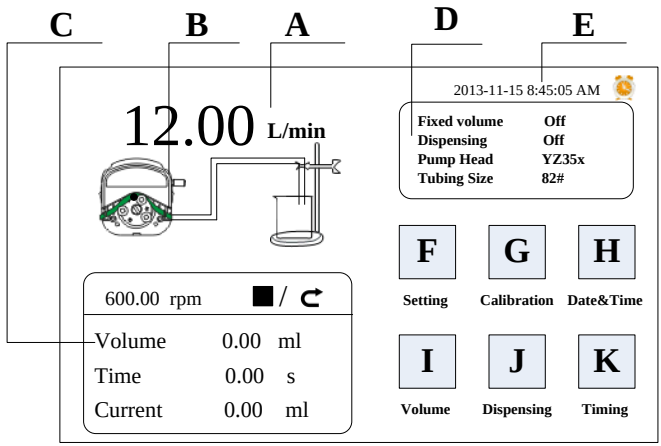
V6-12L Series Operation Interface Instruction

1. Boot Interface

After powering on the system, you enter the welcome interface where you choose system language, Chinese/English. If you do not choose, it will enter the English main interface automatically after 2.5 seconds.

2. Main Interface

Main Interface composition as below:



Speed/Flow Rate Display: In flow rate mode, the current set flow rate is displayed, the motor speed is displayed in the C frame.

In rotating speed mode, the current set speed is displayed, the flow rate is displayed in the C frame. Click A to change the flow rate or speed. When fixed time and volume function turn on, A is forbidden, and it is not allowed to change the flow rate or speed.

Real-time Dynamic Display: Display the current running state.

Real-time Parameter Display: Display the current running state and set up parameters. When fixed volume measurement is turned on, it display the fixed volume measurement parameter; when fixed time and volume function is turned on, it display the fixed time and volume parameter. When these two functions are turned off, all displayed parameters are 0.

Set Parameter Display: Display the fixed volume measurement, fixed time and volume state information, the model of pump head and tube size.

Date and Time Display: Display the current data and time, you can change it in the system setting. When it display an alarm clock on the right side, it means the timer start and stop function is turned on.

System Setting Button: Click this button to set up other parameters.

Flow Calibration Button: Click this button to enter the flow rate calibration interface.

Date & Time Button: Click this button to enter the set up of the current date and time interface.

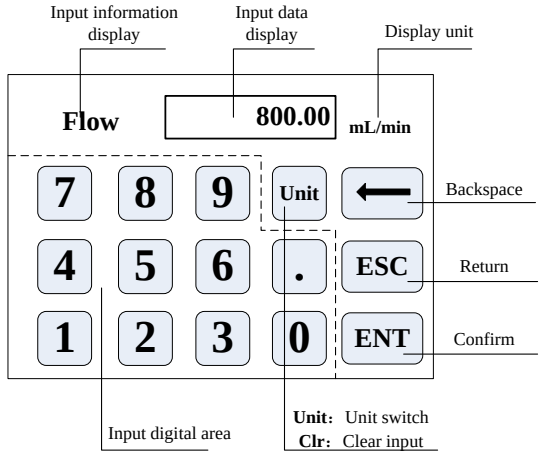
Fixed Volume Measurement Button: Click this button to enter the fixed volume measurement interface**.**

Fixed Time and Volume Button: Click this button to enter fixed time and volume interface.

Timer Start and Stop Button: Click this button to enter timer start and stop interface.

3. Numeric Keypad Input Interface

Numeric keypad input interface as below:



Input Information Display: The information displayed is the current operation object.

Input Data Display: Display the current input data, range is 0.01-9999.

Unit Display: Display input units when input flow rate or volume.

Input Digital Area: Numeric keypad.

Unit/Clr Button: When you input flow rate or volume, this button is Unit button, where you can choose different units. When it is Clr, you can clear the current input data.

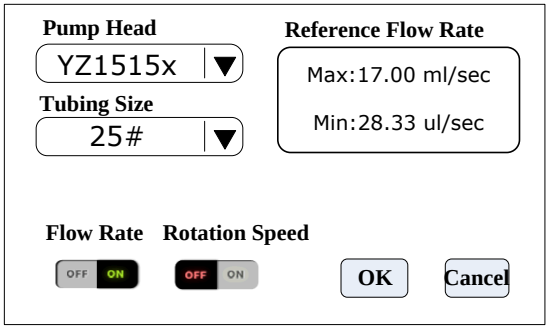
Backspace Button: Delete an input digital.

ESC Button: Cancel the current input, back to prev. interface.

ENT Button: Confirm the current input.

4. The Basic Configuration Interface:

The basic configuration interface:



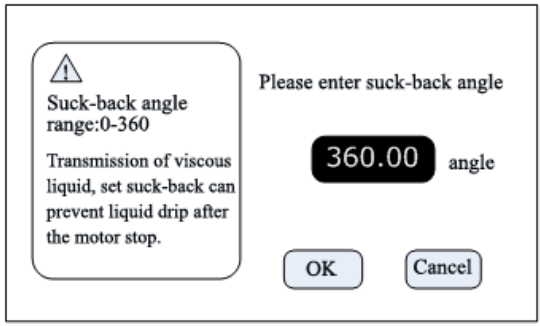
Click the pump head and tubing size to choose the pump head and tubing.

Reference flow rate display the max. and min. flow rate with the current pump head and tubing.

Click the flow rate mode or rotating speed mode button to choose the working mode. When you choose flow rate mode, the flow rate is adjustable, the speed will change with the flow rate. When you choose rotating speed mode, the speed is adjustable, the flow rate will change with the rotating speed. Click the confirm button back to the main interface.

5. Back Suction Angle Interface:

The back suction angle interface as below:

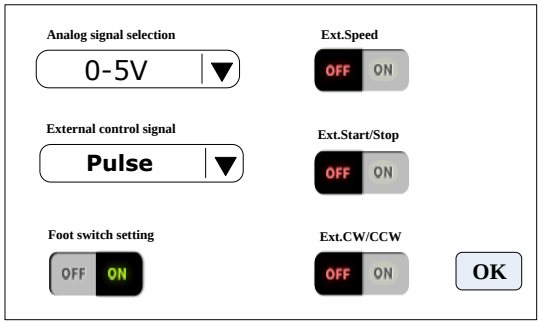


Click the **Setting** button in the main interface, then click **Suck-Back** button to

enter the back suction angle setting interface. Click **angle** button, enter suck-back angle then click **ENT**. This can set all suck-back angle when motor stop running, except **dispensing** is **ON**.

6. External Setting Interface:

External Setting Interface as below:



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

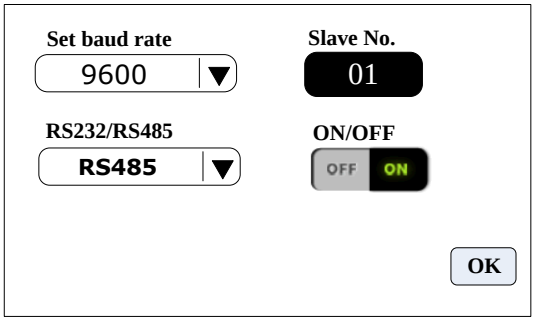
A. According to the external port speed analog input signal to select signal, 0-5V, 0-10V, 4-20mA analog signal three kinds of optional analog signal.
   voltage range and the motor speed is linear.

B. External control and commutation of the motor start-stop signal is divided into two kinds: level mode and pulse mode.
   Specific interface, see details in describes external control interface.

C. Various independent external control mode setting switch work only when the corresponding external control function is turned on.

7. Communication Setting Interface

Communication Setting Interface as below:



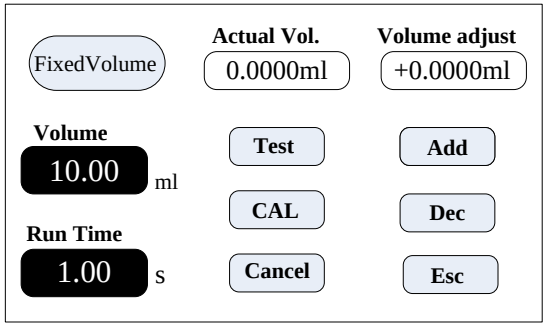
Click **Setting** button in the main interface, then click **Communication** button to enter Communications Settings interface.

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 be communication with master, receiving master signal.

NOTE: Peristaltic pump only under communication control when in the main interface, it is out of communication control when in another interface.

8. Flow Rate Calibration Interface

Flow Rate Calibration Interface as below**:**



The top left corner displays the function, when fixed volume measurement is turned on, it displays fixed volume; when fixed time and volume turn on, it displays 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 working, need to calibrate the flow rate to ensure the transferring or dispensing accuracy.

Process as below:

A. Confirm the running time, if fixed time and volume function, the running time is set up time, unable to change.
B. Click Start button to test, countdown display the run time, 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.
C. After clicking the **Start** button, while the is pump running, you can click the **Stop** button to stop the test.
D. After finishing the tests, the actual volume area display the average data, click the **CAL** button, the calibration is finished. Now the request flow rate or volume is close to theoretical data.
E. If request higher accuracy, you can click **Add** and **Dec** button to micro adjust the flow rate, to reach high accuracy transferring and dispensing.
F. Click **Cancel** button, cancel the test data, the actual volume return to 0.

Online Micro Adjust Volume Process:

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

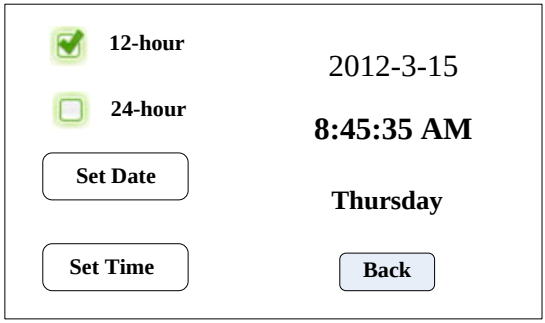
Fixed Time and Volume Mode: If the dispensing volume is bigger or smaller than the set volume, you can micro adjust the volume online, there is no need to stop the pump.

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

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

9. Date & Time Interface:

Setting Date & Time Interface as below:



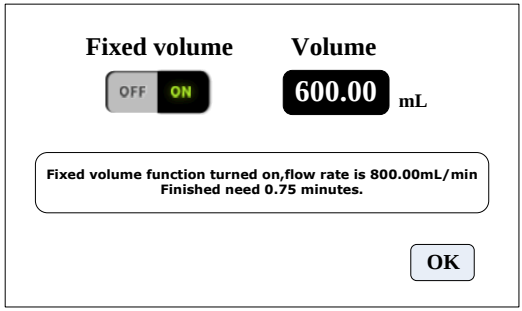
Click the **System Setting** button from the main interface, click **Date** and **Time** button, enter date and time setting interface. The date and time will display on the top right corner of main interface.

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

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

10. Fixed Volume Measurement Interface:

Fixed Volume Measurement Interface as below:

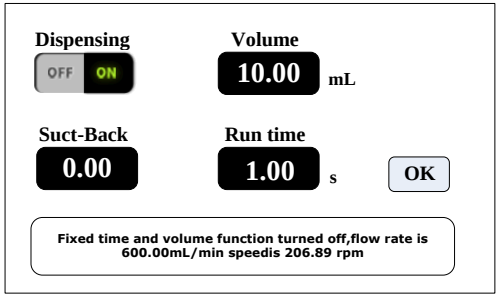


After turning on this function, the peristaltic pump will measure the volume automatically, when the volume reach set up volume, the pump will stop working automatically. The flow rate can be changed during the pump working.

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 display 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.

11. Dispensing Interface:

Dispensing Interface as below:



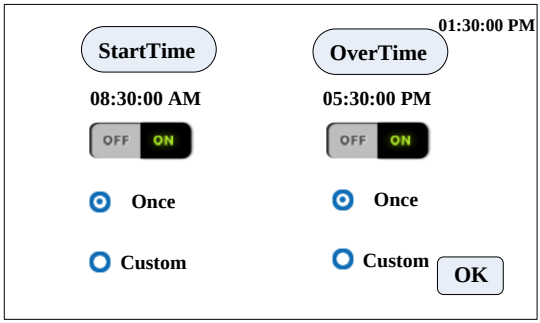
After turning on this function, the peristaltic pump will transfer a fixed volume

within a set time. This function can be used for one-time liquid dispensing. Click the Start button again, start dispensing again.

Click Dispensing button, set **ON** to turn on this function. Click Set **Volume** to input the volume, unit is mL. Click **Suck-back** angle**,** input the suck-back angle, range is 0-360°. Click **Run time**, input working time. The prompting frame display the flow rate and motor speed with the set parameters.

12. Timer Start and Stop Interface：

Timer Start and Stop Interface as below:

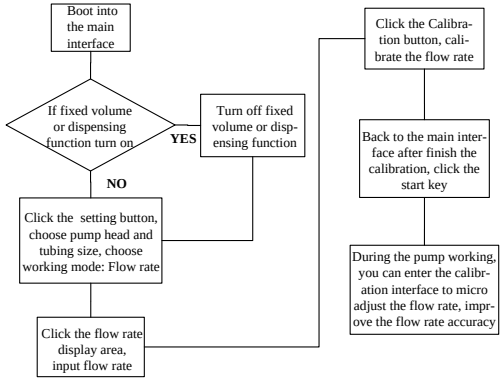


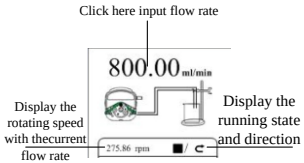
This function can set the start and stop time. When the current time meet the set time, the pump will start or stop automatically.

When fixed volume measurement or fixed time and volume function turn on, the timer stop function is forbidden.

Main Functions Operation Process

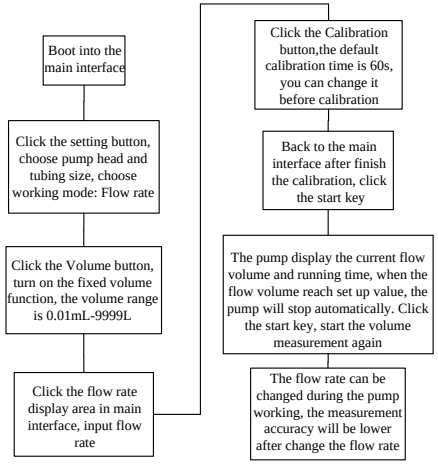
1. Flow Rate Transferring Function

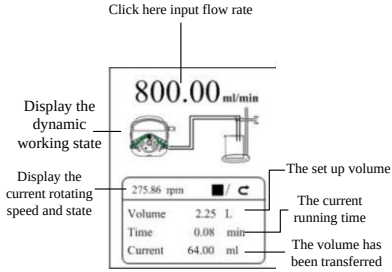




Note: Flow rate calibration process please refer the flow rate calibration interface instruction.

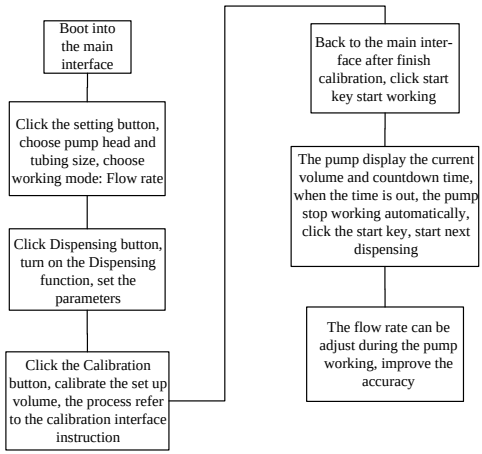
2. Fixed Volume Measurement Function

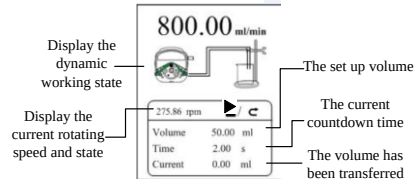




Note: Flow rate calibration process please refer the flow rate calibration interface instruction.

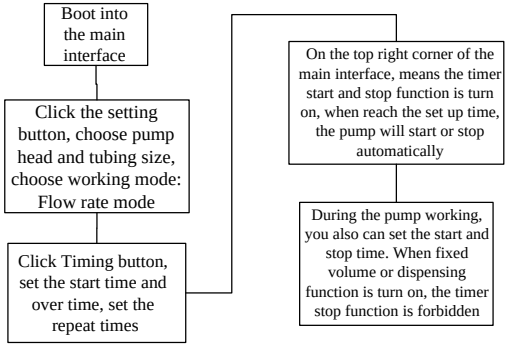
3. Dispensing

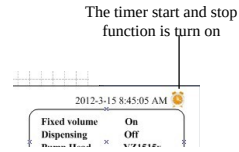




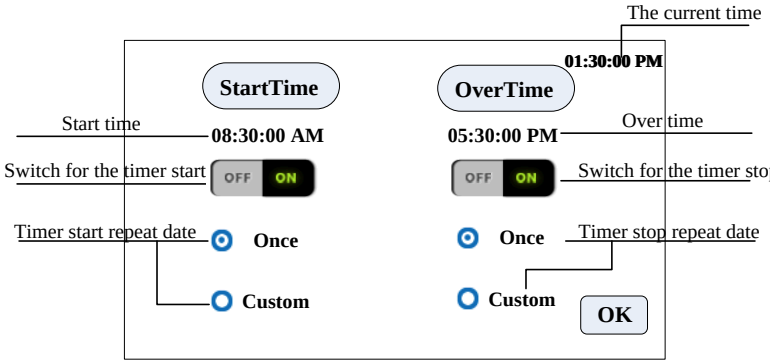
Note: Flow rate calibration process please refer the flow rate calibration interface instruction.

4. Timer Start and Stop Function



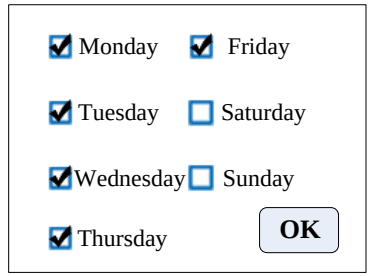


Under the flow rate transferring mode, set the pump start at 8:30 a.m. from Monday to Friday, stop at 5:30 p.m., the process as below:



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:



Timer stop setting process is same with the timer start.

V6-12L Series Technical Specification

Speed range	0.1-600rpm	Power supply	AC220V±10%，50Hz/60Hz (standard)
			AC110V±10%，50Hz/60Hz (optional)
		Power consumption	<300W
Speed resolution	0.01rpm/min	Temperature	0-40℃
Flow rate resolution	0.01ml	Relative humidity	<80%
Operation mode	Touch screen and membrane keypad	Dimensions (L*W*H)	302*222*275mm
Display	4.3 inch true color display screen	Weight	13.54Kg
External control	TTL level	Protection rating	IP31

V6-12L Series Function and Features

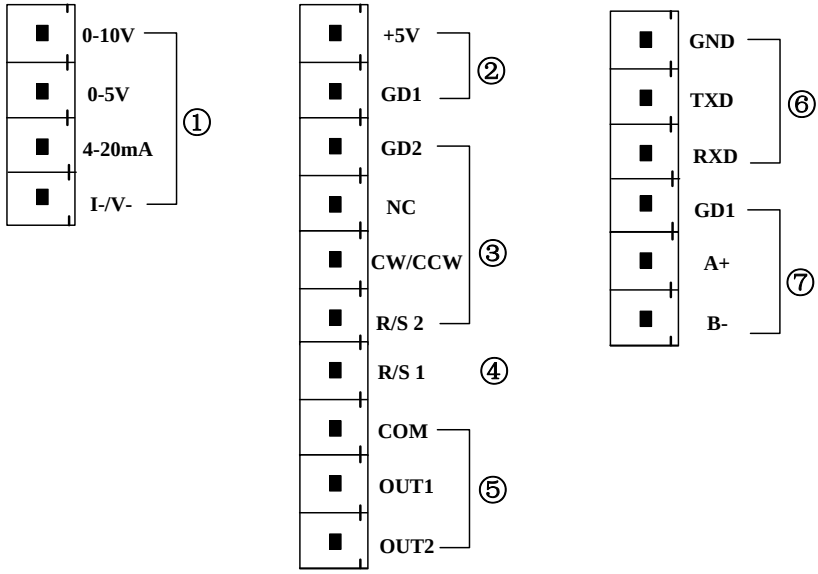
- 4.3 inch color touch screen control with dynamic display of working status, the flow volume and motor speed display in the same screen.
- Intelligent calibration function where you can calibrate the flow rate and dispensing volume to ensure the flow accuracy, suitable for high accuracy transferring liquid.
- On-line micro adjusting function lets you adjust the flow rate during production progress, to avoid filling errors because of tubing fatigue and decreased elasticity.
- Accurate angle control technology, reach high precision dispensing and measurement.
- 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 volume can be changed. It is suitable for laboratory liquid dosing and chemical reaction process.

- Fixed time and volume function: After turning on this function, the peristaltic pump will transfer a fixed volume within a set time. It is suitable for liquid dispensing in laboratory and industrial production.
- Timed start and stop function: Can set the pump start and stop time freely to reach automation control.
- Load-shedding memory function, stores the running parameters in time, safe and reliable.
- Fast fluid-filling function, that can wash the tubing and fill fluid in the tubing.
- High torque and low power loss, it can load several pump heads or multichannel pump head to meet different application requests.
- External control of start and stop, which is convenient for equipment support.
- 304 stainless steel housing, resist corrosion, no rust.

External Control Interface Instruction:

External control interface as below:



1. **Analog signal input terminal:** External control setting interface, choose the '**Analog Signal**' and turn on the '**Ext. Speed**'. Control the motor speed from 0 rpm to 600rpm through analog signal.

   0-10V: 0V to 10V voltage signal input terminal.

   0-5V: 0V to 5V voltage signal input terminal.

   4-20mA: 4mA to 20mA current signal input terminal.

   I_/V_: Analog signal negative terminal.

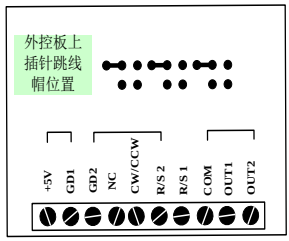
Notice: Please do not connect 0-10V signal connect to 0-5V terminal or 4-20mA terminal. This is forbidden. Wrong connection will damage the pump.

Internal isolation 5VDC output

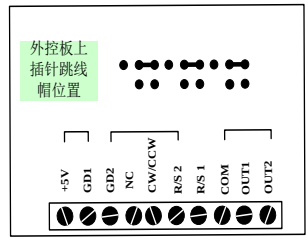
2. External control start/stop, cw/ccw signal input terminal:

Active signal input.

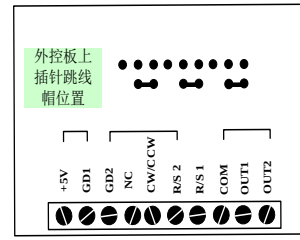
If you need change to 12VDC or 24VDC input, please open the controller housing, and change the jumper connection on the external control board as below:



12V电平输入



24V电平输入



5V电平输入

GD2: External control signal common input terminal.

NC: Null.

CW/CCW: External control direction signal input

Pulse mode: the direction change once when receive one pulse signal (**rising edge effectively)**.

Level mode: when high level the pump clockwise running, when low level, the pump counterclockwise running.

R/S 2: External control start/stop signal input

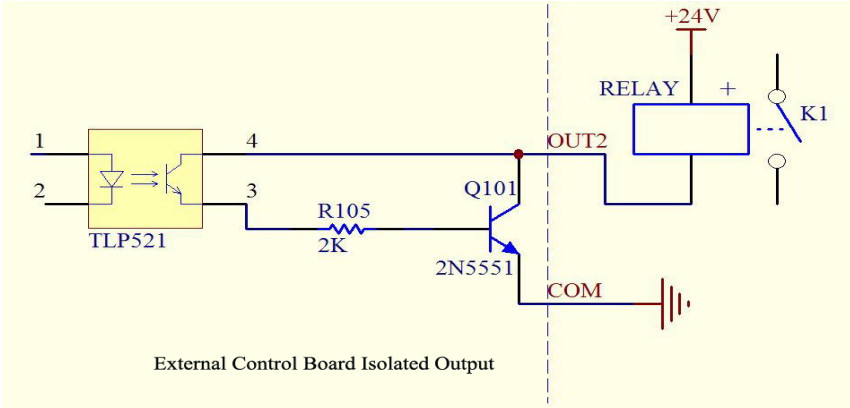
Pulse mode: the pump working status change once when receive one pulse signal (**rising edge effectively)**.

Level mode: when high level, the pump running; when low level the pump stop running.

Set up the external control mode in the setting interface, turn on the correspond external control function, external control signal is active.

3. **R/S 1 External control signal input terminal**: Passive signal input.
   Pulse mode: R/S 1 short connect with GD1 and then disconnect, the pump start running. Short connect and disconnect again, the pump stop running.
   Level mode: R/S 1 short connect with GD1, the pump running; when disconnect, the pump stop running.
   This terminal can connect with passive switch and foot pedal. In the external control setting interface to set the active of this terminal, the foot pedal option.

4. **The motor working status output terminal:**
   Output motor working status as below:



If connect with relays, when the motor running, K1 connect; when the motor stop running, the K1 disconnect.

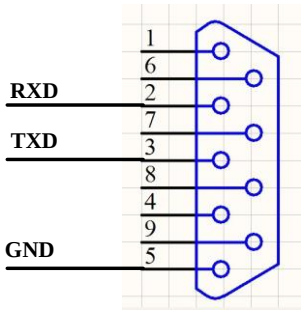
5. **RS232 Communication:** Choose RS232 in the Communication setting interface, this terminal is active.

   GND: Communication ground terminal.

   TXD: Master sending, peristaltic pump receive signal terminal.

   RXD: Peristaltic pump sending, master receive signal terminal.

RS232 Communication Interface Connection Diagram as below:



6. **RS485 Communication Interface:** Choose RS485 in the communication setting interface, this terminal is active**.**

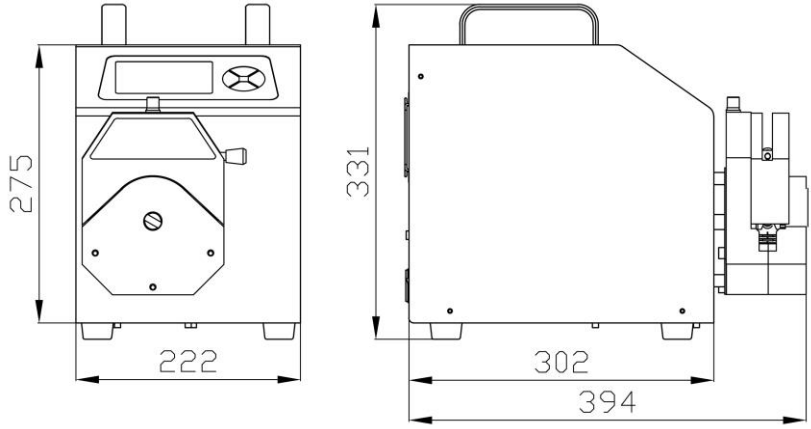
   GD1: RS485 signal interface

   A+: Connect RS485 A+ terminal

   B-: Connect RS485 B- terminal

Instruction: No matter choose RS232 or RS485, the communication protocol is standard MODBUS protocol.

Product Dimension (mm):



Maintenance

When the pump is not working, please loosen the cartridges pressing the tubing to avoid changing the shape of the tubing due to longtime extrusion.
Keep the rollers of the pump head clean and dry, otherwise it can quicken wearing of the tubing, reduce the lifespan of the tubing and lead the rollers to be damaged earlier.
The pump head cannot resist super corrosive liquid. Please pay attention to it when using it.
Keep the rollers of the pump head clean and dry. If the surface of the rollers is not clean, it can quicken the wear of the tubing, and reduce the useful life of the tubing. If there is liquid on the rollers, please dry it. Longtime moisture can damage the rollers.

Warranty and After Service

Products have 1 year warranty (not including tubing). In the warranty, if the products are damaged because of the users' wrong operation or other human damages, our company is not responsible for the 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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