

# JIEHENG PUMP



## Operation Manual

KY-300EL I /MN3

KY-300EL I /406D

KY-300EL I /104KA

KY-300EL II /MN4

KY-300EL II /314D

KY-300EL II /TH504



重庆杰恒蠕动泵有限公司

CHONGQING JIEHENG PERISTALTIC PUMPS CO., LTD.

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# 1. Security



Please read this instructions carefully before operation!

- In order to avoid fire or electric shock, please do not use this pump in the outdoor and humid environment.
- In order to reduce the risk of electric shock and the possibility of damage to the pump, please use ground 3-hole WY16K3TE aerial socket.
- In the installation, please plug the 3 hole WY16K3TE aerial socket into the pump rear socket, then power on.
- Do not place heavy objects on the pump or allow liquids to flow into the machine.
- Do not cover the pump vents.
- After the power is on, the electrical components are in working condition, so please unplug the power cord if you do not use the pump.
- Tubing is the only consumables, due to worn tubing may cause cracks, the liquid will overflow from the tubing, which may harm the human body or equipment. It depends on your understanding of the pumped liquid and control, not any legal causal relationship with this pump!

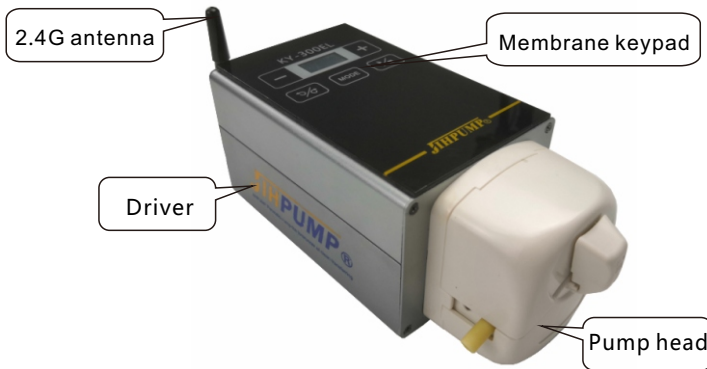
## 2. Know about peristaltic pump

Peristaltic pump, also known as tubing pump and constant current pump, is a new type of industrial pump. It is a product of modern industrial development. The liquid only passes through the tube and does not contact any other parts of the pump body. It can be cleaned and controlled accurately. So it is widely used in pharmaceutical, food, fine chemical, medical, environmental, laboratory and other industries, conveying some sensitive, viscous, highly corrosive, grinding shear, high purity requirements and media containing certain particulate materials.

The tube is used as a positive displacement pump, and its flow rate and rotational speed are in a linear constant relationship, that is, the flow rate corresponding to the rotational speed of the output of the driving device is a certain value. Due to the structural and material limitations of the pump, the pump speed should not be too high and the pressure should not be too large. Therefore, it is especially important to configure different tubes according to different media and process requirements.

The medium pumped by the peristaltic pump only passes through the high-elastic tube, and is not in contact with the pump body. Therefore, the components of the pump are not corroded by the fluid material, the fluid material does not leak and pollute the surrounding environment, and conforms to the "GMP" standards of pharmaceutical production, and "FDA" for food production.

KY series peristaltic pump is a new type of fluid delivery pump that uses chip drive technology and LED that shows the actual speed of the pump. It possess the advantages of simple operation, stable and reliable performance, long-term continuous operation, and ability to save input working parameters. The minimum speed of 0.1 rpm is especially useful in the dropping operation. The "SET" function with time setting facilitates programmatic control of pump operation. It is suitable for bioengineering, chemical, pharmaceutical, hospital, food small supporting production and research unit laboratories.



A complete set of peristaltic pump consists of three parts: drive + pump head + tubing.

Driver: provides power, additional functions.

Pump head: key part, to hold the tubing.

Tubing: the only part that comes into contact with the material pumped.

Advantages of peristaltic pump:

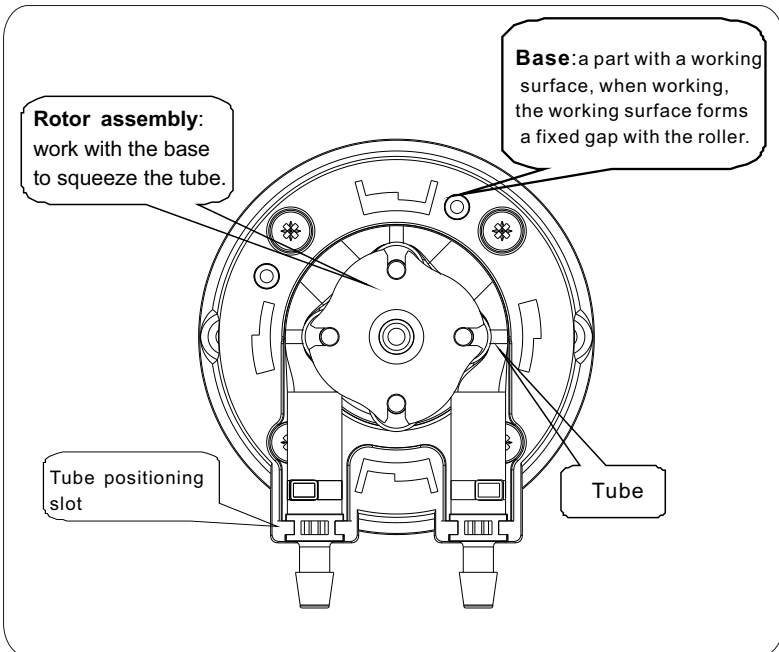
- Highly clean, non pollution: liquid only contact tubing, easy to clean, replace the tubing just a few seconds.
- High efficiency and low energy consumption: self-sucking, one-way valve capability.
- Low shear: pumpable shear sensitive liquid and organic solvent, transportable solid solution.
- Low maintenance: quick plug, no valves and seals.
- Easy to handle: timing, constant, variable and reverse transport are possible.

### 3. Pump head&tubing

Pump head	Tube (Id×wall)	Flow rate (ml/min)
 406D	14# (1.6×1.6) 16# (3.2×1.6) 25# (4.8×1.6) 17# (6.4×1.6)	0~550
 104KA	14# (1.6×1.6) 16# (3.2×1.6) 25# (4.8×1.6)	0~279
 MN3	16# (3.2×1.6) 25# (4.8×1.6) 17# (6.4×1.6)	0~570
 Mn4	16# (3.2×1.6) 25# (4.8×1.6) 17# (6.4×1.6)	0~805
 314D	14# (1.6×1.6) 16# (3.2×1.6) 25# (4.8×1.6) 17# (6.4×1.6) 18# (7.9×1.6)	0~930
 Th504	14# (1.6×1.6) 16# (3.2×1.6) 25# (4.8×1.6) 17# (6.4×1.6)	0~800

## 4.Principle

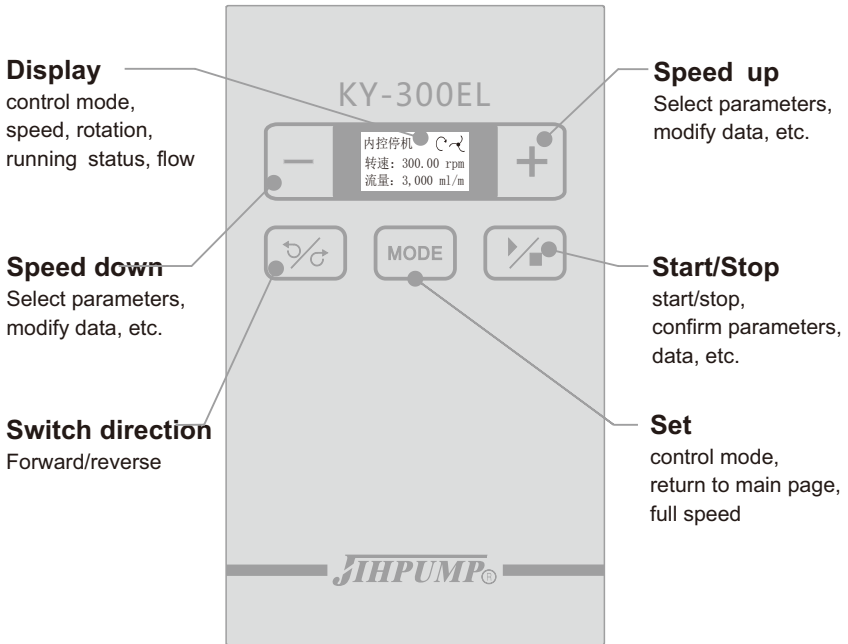
Peristaltic pump principle: through the high elasticity of the pump tubing, under the action of the rotating squeeze of the roller, the suction end of the tubing forms a part of the vacuum, the fluid material is sucked into the tubing, and with the rotation of the roller, the fluid material is squeezed to the discharge end of the tubing, so as to achieve the purpose of pumping fluid material, just as your finger clips and squeezes a liquid filled tubing, with the fingers sliding forward, the liquid in the tubing will move forward, in our pump it is squeezed by the roller instead of your fingers to work.



## 5. Parameter

Pump head	406D	104KA	MN3	MN4	314D	TH504
Speed range	0-300 rpm					
Speed resolution	0.1 rpm					
Max discharge pressure	0.17 MPa					
Control	Membrane keypad					
Main functions	Internal control,external control,timing, offline					
External control mode	0-5V,0-10V,4-20mA,MODBUS TCP(WIFI connection)					
Display	OLED					
Power supply	Ac 220V±10%, 50Hz/60Hz					
Power	≤12W	≤15W	≤30W	≤36W		
Working environment	Temperature 0-60℃,relative humidity<85%					
Driver dimension	74.6mm*90mm*34.7mm				89.6mm*89.6mm*137mm	
Net weight	1050g	820g	1050g	1300g	1950g	1370g
IP Rating	IP31					

### 3) Membrane keypad



**Display**  
control mode,  
speed, rotation,  
running status, flow

**Speed up**  
Select parameters,  
modify data, etc.

**Speed down**  
Select parameters,  
modify data, etc.

**Start/Stop**  
start/stop,  
confirm parameters,  
data, etc.

**Switch direction**  
Forward/reverse

**Set**  
control mode,  
return to main page,  
full speed

**Start/stop:** As a running command button in normal use, make a confirmation button in the setting.

**Switch direction:** Direction changes can be made during operation or standby.

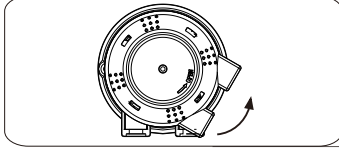
**Speed up:** Increase the speed when operation, and make options in the settings.

**Speed down:** Reduce the speed during operation and make options in the settings.

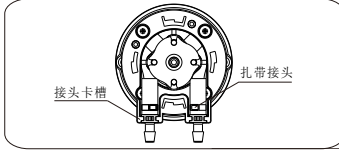
**Set:** Set in the standby state, which is suitable for interval control mode, timing mode, external control, offline mode and the parameter setting (press this button to go back to homepage while in the parameter selection interface). Press this key in running state, it will run at the highest speed.

## 6. Usage

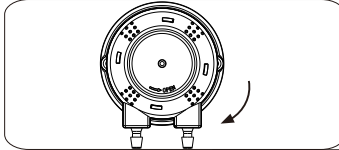
### 1) Mount tube (104KA/MN3/MN4)



a) Turn counterclockwise to open the pump cover.

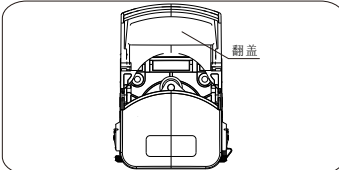


b) The built-in tube is bypassed by the rotor, and the fittings at both ends are snapped into the slot. Note: The zip tie is facing inwards. The tube is not twisted, and is placed in the middle of the roller.

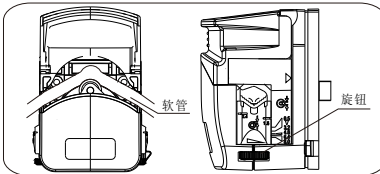


c) Align the cover clip with the base slot and turn the lock pump cover clockwise.

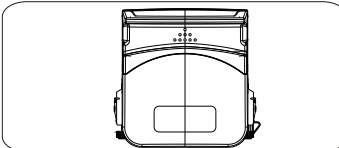
### 2) Mount tube (406D/314D/TH504)



a) Push up to open the cover.



b) Route the tube around the rotor, place it in the pump head, and straighten the tube. Note: Assemble different sizes of tubes and adjust the knob to adapt.

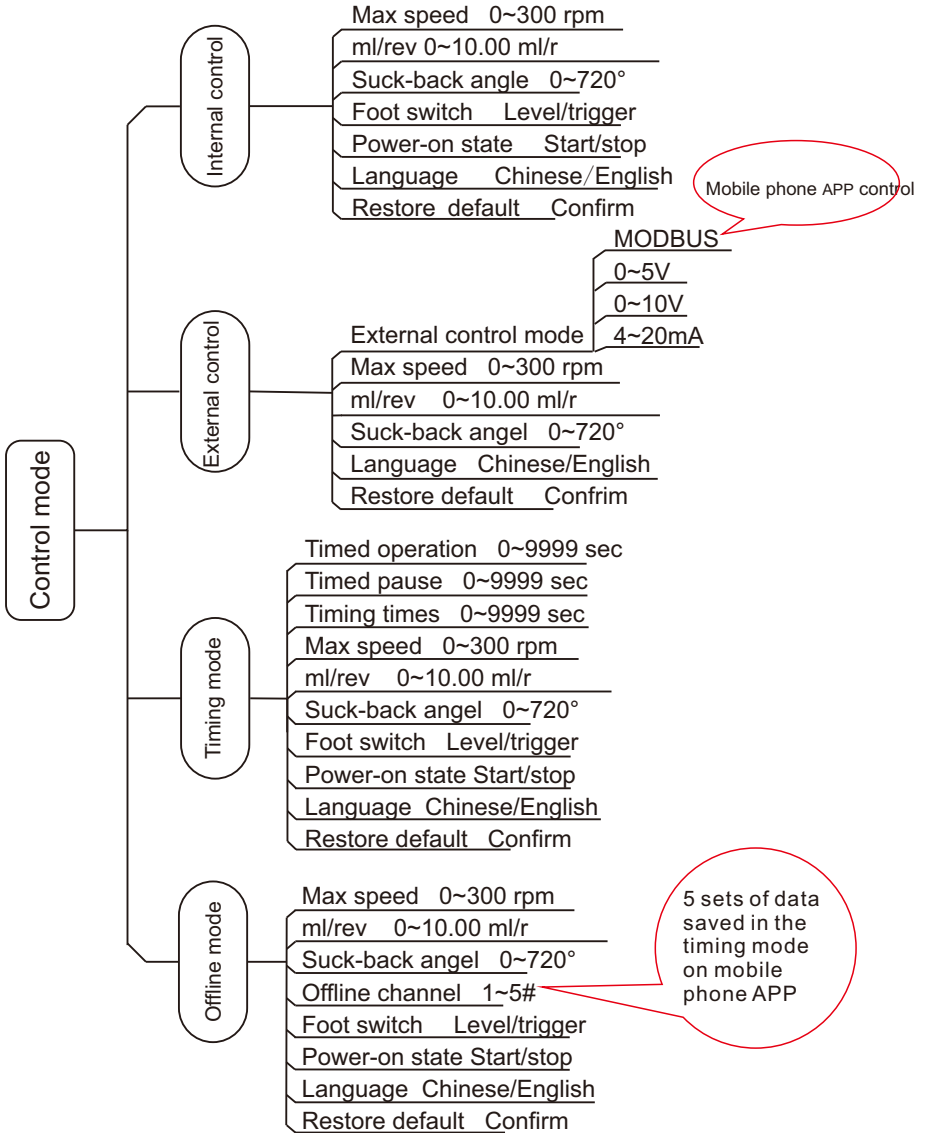


c) Close the flap and lock the tube.  
Note: The knob cannot be adjusted at will, and it has been adjusted at the factory unless the tube size is exchanged.

#### Remark

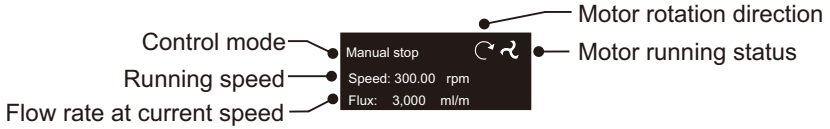
1. Different pump head installations will be slightly different.
2. The tube is installed in the pump head at the factory. Only when the tube is replaced or the pump head is cleaned, the tube should be disassembled. The installation should be carried out according to the above steps.

4) Panel operation logic diagram

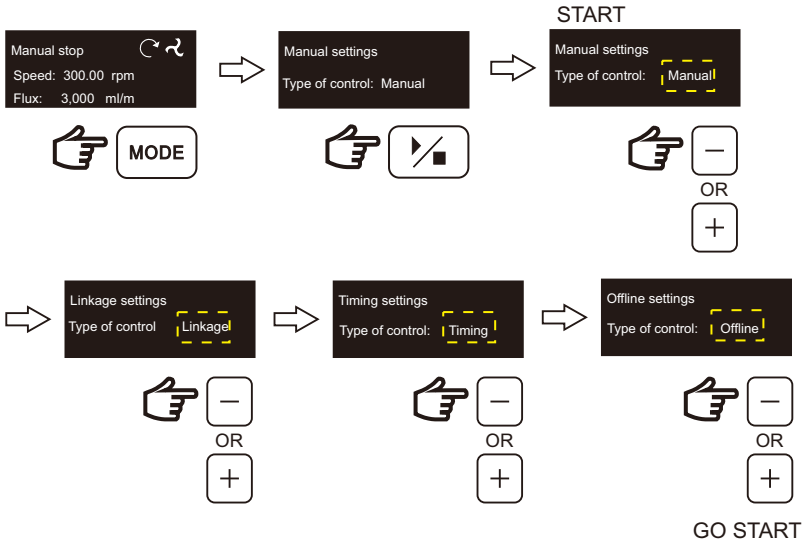


5) Panel operation precess

Homepage

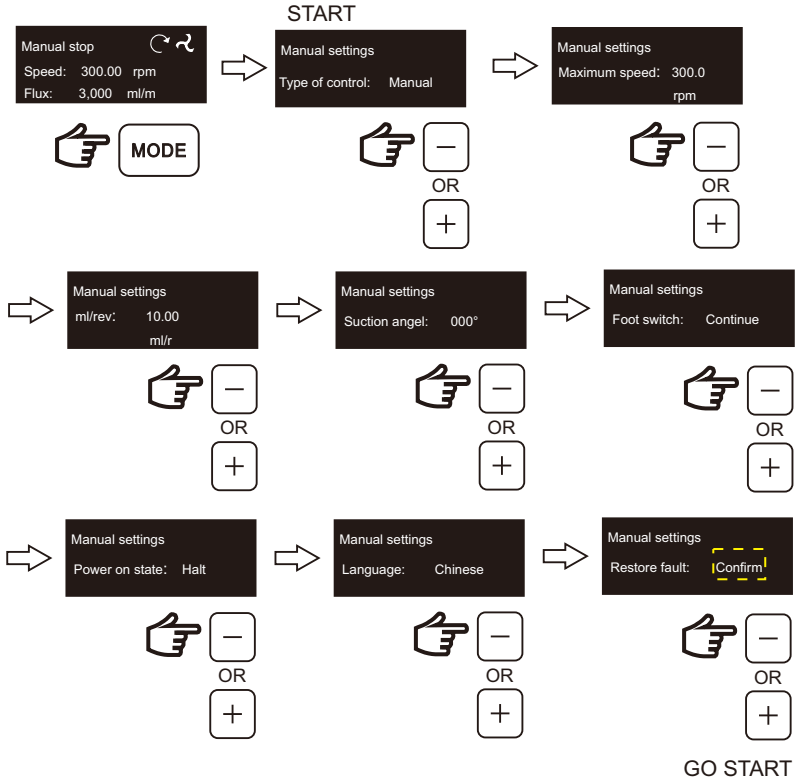




Select mode



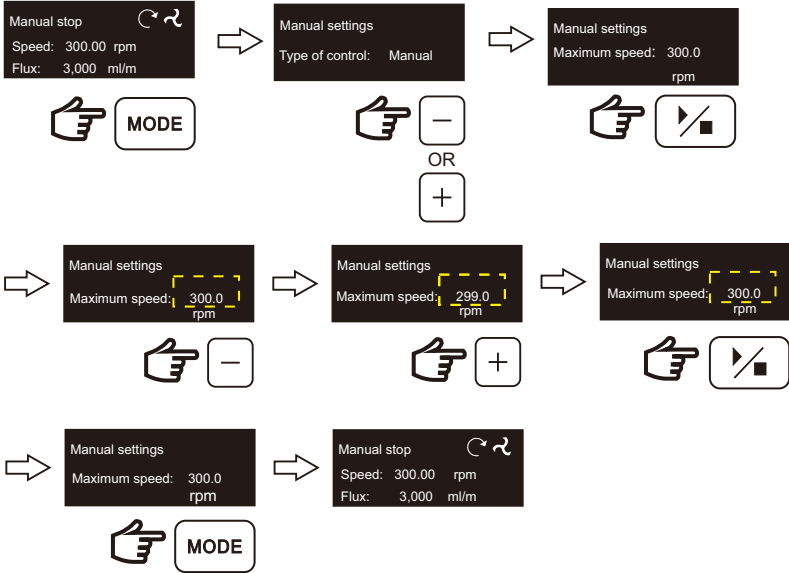
Tips: confirm selected mode  
Then back to homepage

Set parameter

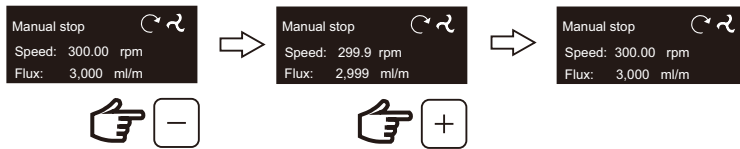


Tips:  enter parameter modification setting  
or  back to homepage

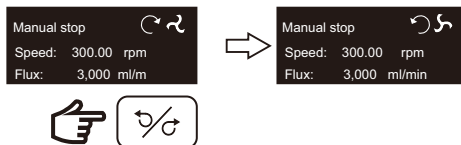
### Change parameter



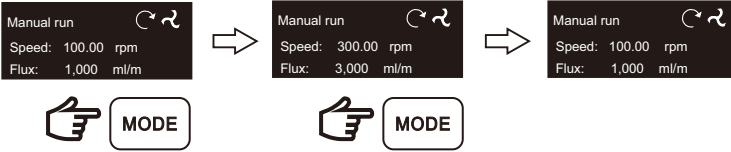
### Change running speed



### Change running direction

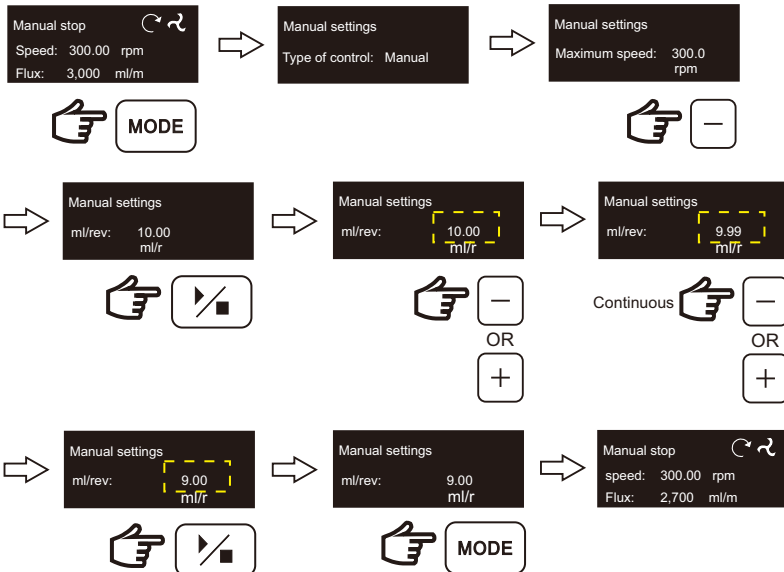


Set full speed running



Tips: During running, **MODE** for full speed operation,  
Then **MODE** return to set speed.

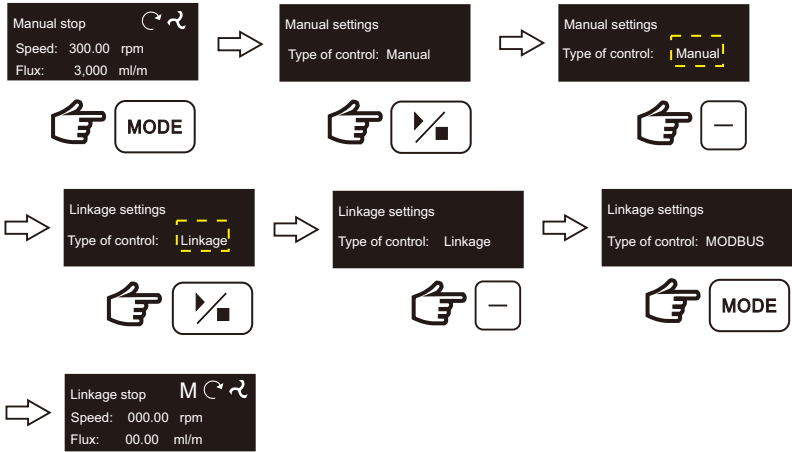
Set flow dispaly



Tips: The factory default flow parameter is 10ml/rev.

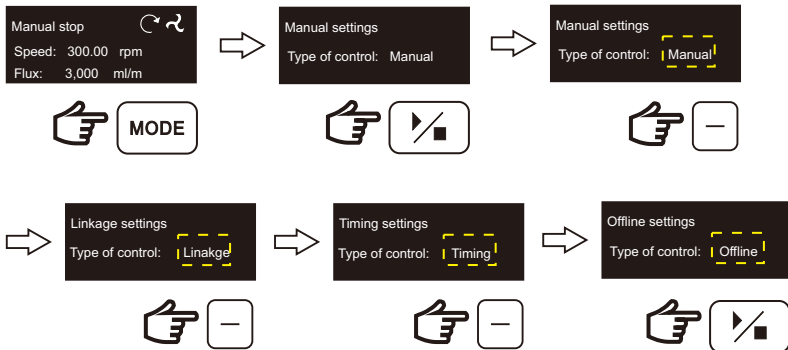
Users can revise the "ml/rev" parameter based on the measured data.

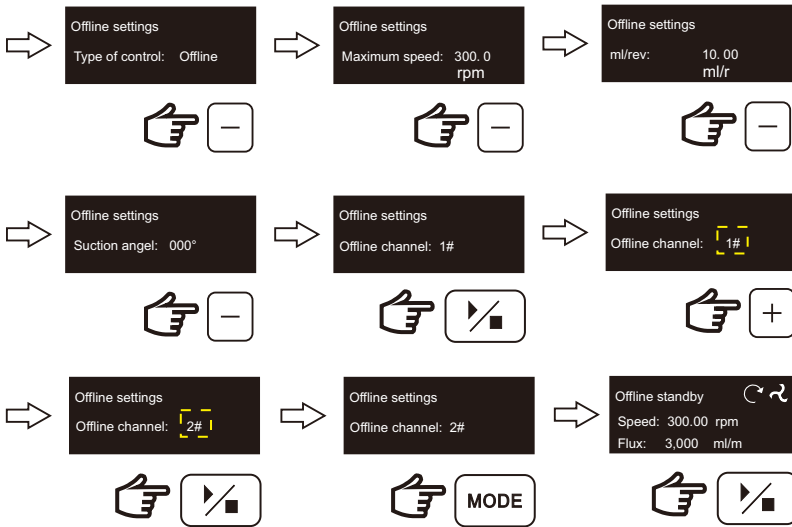
Set Mobil phone APP control



Tips: For the follow-up operation, please refer to "APP Manual".

Set Mobile phone APP offline mode

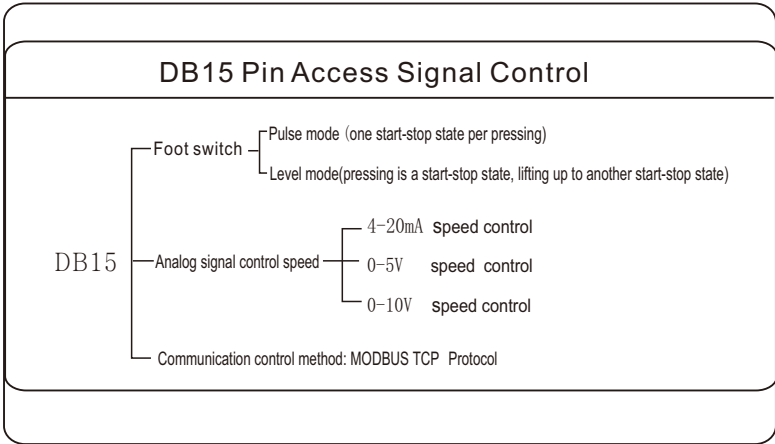




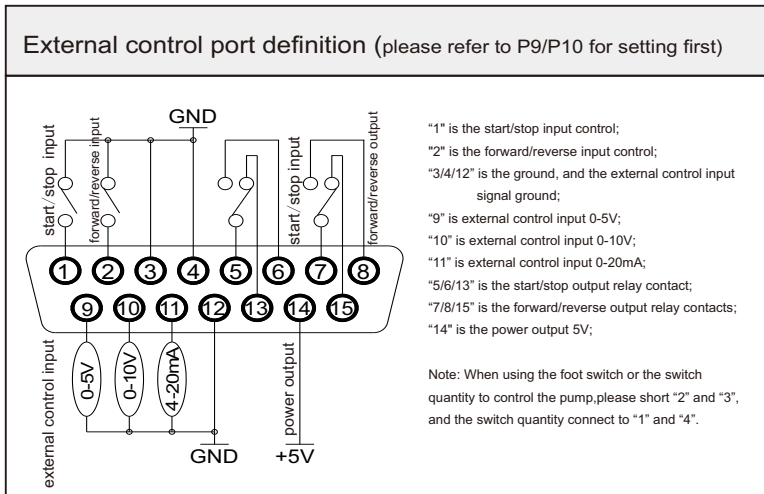
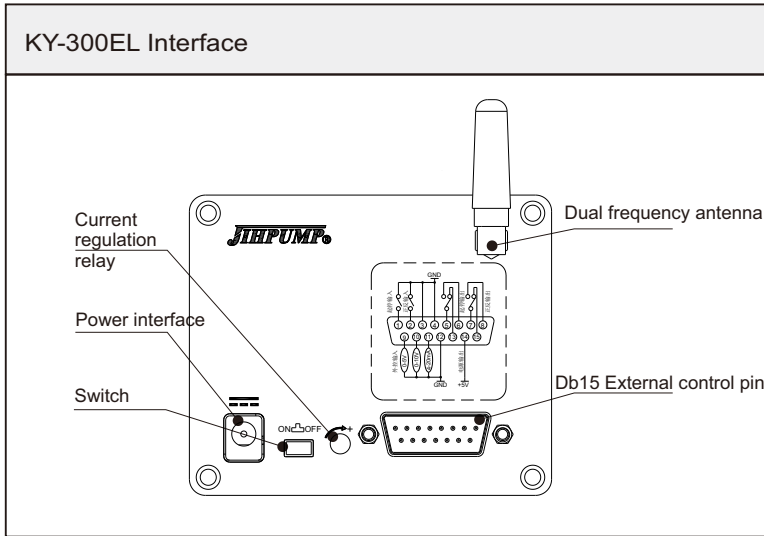
Tips: Offline channel 1#~5# corresponds to the data 1~5 saved in the APP control "timing mode" (APP data saving operation, please refer to APP manual for details).

Special Note:

1. Please set the "mode" and "parameters" before use, and then return to the homepage to set the "running speed", and then press the start/stop keys to run;
2. The factory default is internal control mode (maximum speed 300rpm, flow rate 10ml/r, suction angle 0°, foot switch: continuous, power-on state: stop, language: Chinese), when restoring the default settings, except for the language type, the rest of the parameters are restored to the factory default state.
3. In non-homepage such as mode selection, parameter setting or parameter modification, if there is no action for 30S, it will automatically return to the homepage;
4. See page 9 of this manual for the setting range of each parameter.



No.	Item	Description
1	Communication data format	MODBUS_tcp standard communication protocol, the baud rate is 9600, 8 data bits, 1 stop bit, no parity.
2	Implemented command code	MODBUS_tcp communication command codes are 02, 04, 06, and 15, and the starting address is 999.
3	02 discrete signal input	The bit address 999 of the 02 command is the start/stop signal, 1 is start, 0 is stop; 1000 is forward/reverse, 1 is forward, 0 is reverse.
4	04 register input	The word address 999 of the 04 command is the speed signal, and the data is the integer number.
5	06 register output	The word address 999 of the 06 command is the speed control, and the data is the integer number.
6	15 discrete signal output	The bit address 999 of the 15 command is the start/stop control, and 1000 is the forward/reverse control.



## 7.Maintenance

1) Before each start of the peristaltic pump, carefully check the tube for damage. Before the pump stops running, suck water to clean the tube.

2) Silicone tube is not resistant to strong acid, strong alkali, organic solvents. It is best to use a small length to be immersed in the solution before use, to avoid corrosion and rupture of the tube during use, causing liquid to seep and corrode the pump head and flow into the pump body to damage the machine.

3) Always check the extruded part of the silicone tube to prevent the tube from aging and damage, to prevent liquid from flowing into the pump body and damage the motor and circuit. When the silicone tube is found to be aging, it should be replaced in time. In order to extend the service life of the silicone tube, the extruded portion of the silicone tube is often replaced. The silicone tube should be taken out when not in use for a long time. If necessary, apply a proper amount of grease to the friction part of the tube.

4) Since the roller is rolling and rubbing, it is necessary to keep the inside of the rolling groove clean.

5) The tube used in the peristaltic pump is a special silicone high-elastic tube. During the use of the pump, other tubes should not be used instead. If you need to pump strong acid, strong alkali, organic solvent or need long life tube, please contact Jieheng Company to purchase.

## 8. Malfunction

Item	Description	Check	Treat	Remark
1	After switch on, the OLED displays, press the start button but pump does not run	Running speed is 0	Set running speed	
2	The displayed flow is inconsistent with the actual flow	Is there any difference between the "ml/rev" parameter and the actual value	Reset the "ml/rev" parameter	
3	OLED screen displays garbled characters	Whether the display board cable is well connected	Reconnect the cable	
4	After power on, the roller rotates normally, but cannot deliver liquid	Check whether the upper occlusion of the pump head squeezes the tube too loosely, and the tube is not compressed	Adjust the gap of pressure tube on the pump head	
		Check the tube for damage	Replace with new tube	
5	When working, the tube slides along with the roller	Check whether the tube clamps the tube tightly	Adjust tube clamps	
6	Stop during operation	Timing set	Reset timing parameters	
7	Tube wears too early	Roller flexibility	Fix roller	Use special tubes for peristaltic pumps

## 9. After sales service

The work of Jieheng is not terminated due to the sale of the products. Our company provides the service promise of “seven-day replacement, one-year warranty and lifetime maintenance” for the products. At the same time provide humanized after-sales tracking, technical support and other services to ensure that you use the peristaltic pump products in your hand.

After you receive the product, if you have any comments or dissatisfaction with the product, please contact the Jieheng Service Center directly, we are happy to solve the problem at any time. You can also get in touch with Jieheng's sales manager who can also provide you with support for product application, maintenance and other aspects.

Thank you again for using the peristaltic pump products produced by our company! Your feedback is an important source and motivation for our ability to innovate, and we will value your every suggestion and opinion!

## 10. Standard configuration

No.	Description	Unit	Quantity	Remark
1	Driver	pc	1	
2	406D	pc	1	Choose one of them
	104KA			
	MN3			
	MN4			
	314D			
	TH504			
3	Power adaptor	pc	1	
4	Operation manual	pc	1	
5	Certificate of qualification	pc	1	



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