PreFluid

BT-300 Series Flow Pump

Instruction manual

CHANGZHOU KODI MACHINERY CO., LTD
www.kodichina.com

我们为您真诚服务到永远!

We sincerely service for you forever!

常州考弟公司追求卓越不凡的品质，更注重良好的售后服务!

Changzhou Kodi Company pursues extraordinary quality and focuses on good after-sales service!

本说明书就该 **BT-300** 系列基本调速泵的用法加以说明!

This manual specially illustrates the usage of BT-300 series flow pump!

操作错误会引起意外事故，缩短装置的寿命，降低其性能。

Wrong operation can cause accidents, shorten the life of the device and reduce its performance.

因此，恳请您在使用前务必仔细阅读该说明书!

Therefore, please be sure to carefully read the manual before using!

将本说明书交到最终用户手中!

The manual will be submitted to end-users!

请妥善保管好本说明书，以备需要时查阅!

Please keep this manual to prepare for inspection when required!

说明书供参考所用，具体设计外形以实物为准!

The manual is used for only reference, the specific shape design is subject to the real object.

I. General Introduction

BT-300 model peristaltic pump is an economical speed governing pump, whose case is treated with carbon steel and special coating. The interior is driven by a stepper motor. The 64-subdivision operation causes smooth running, accurate speed and small noise of the motor. It is suitable for fluid transportation in many fields such as beverage, health care products, pharmacy, fine chemical engineering and printing industry.

Ø The picture of BT300 peristaltic pump as follows:

ØThis series of products mainly consist of two parts:

· Pump head.

· Driver: the main part of peristaltic pump (power producer).

II. Product Introduction

1. The functions of the product

Ø Three digital tube displays speed, the potentiometer regulates the speed.

Ø The direction of rotation, start or stop is operated by the dial switch on the panel.

Ø The equipped full-speed button makes filling and draining more quickly.

Ø Pump speed, steering and start or stop can be controlled by external signal.

Ø The pump speed, steering and start or stop can be controlled through the RS485 interface and Modbus RTU communication protocol.

Ø It is applicable to various pump heads.

2. Technical parameters of products

Detailed technical parameters of the product are shown in the table below：

Type	BT300
Drive	64 subdivided step drive
Speed range	0～300rpm
Speed resolution	1rpm
Adjusting modes	Potentiometer knob continuous adjustment
Display mode	Prepositive 3-bit LED speed display
External control interface	Control start or stop, veer and revolving speed（4～20mA current signal）; RS485 interface Modbus RTU communication protocol control start or stop, veer and revolving speed
Applicable power supply	220VAC（±10%），50Hz/60Hz
Power consumption	≤75W
Working environment	Temperature 0～40℃，relative humidity≤80%
Applicable pump head	YZ15 / KZ15
Flow range	0.06-1140ml/min
Case	Carbon steel case, surface special coating treatment

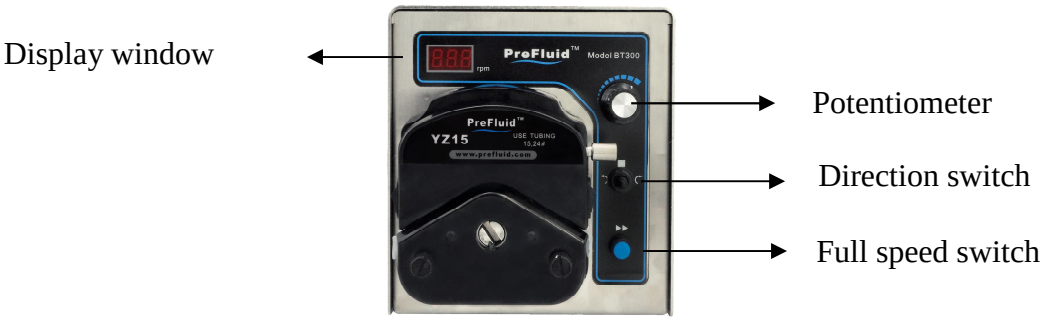
Note 1： The applicable pump heads in the above table can be interchanged on the same drive to accommodate the actual needs of different channels, flows and pressures.

Note 2： The reference flow of products refers to Pump Head Instruction for details.

III. Description of Control Panel & Back Panel

1. Description of control panel

The control panel is composed of a three-bit digital tube, a directional control switch, a full speed switch and a speed regulating potentiometer, as shown in the picture below:



Component description:

Ø Display window：Three-bit digital tube shows current revolving speed.

Ø Direction switch：control the direction of pump rotation，the middle is stop

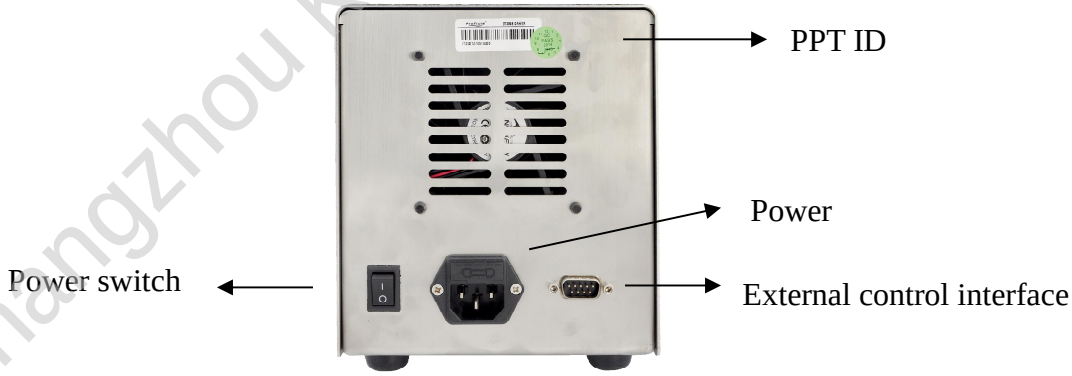
Ø Full speed switch：Hold on the switch, the pump operates at the highest speed; loosen the switch, the pump will stop.

Ø Potentiometer：regulate revolving speed; revolving speed increases at clockwise direction while revolving speed decreases at counterclockwise direction.

Note：It is normal if the revolving speed of the display window has a pulse of 1 rpm.

2. Description of back panel

The back panel has external control interface, power switch and power socket, etc., as shown below.



Ø Power socket：Dial “I” for ON and “O” for OFF.

Ø Power socket：220V ac voltage input jack

Ø External control interface：Interface for communication, current signals, steering, internal and external control selection, start or stop control signals, etc.

Ø PPT ID：Product information code

IV. Operation Description

1. Installation of pump head and hose

The pump head and hose should be installed before operation. The installation method is detailed in the relevant 《pump head manual》.

2. Starting up

Plug the power plug into the socket. The power supply of this series of machines is 220VAC.

Turn on the power switch on the back panel of the machine. At this point, the digital tube should display the current speed. When the potentiometer is adjusted, the rotational speed will change accordingly.

Notice: Make sure that the supply voltage is in line with this machine and re plug in.

The power switch is turned to "I" to turn on, and dial "0" to turn off.

3. Function

Adjust the potentiometer to achieve the required speed. Then, according to the position of the hose inlet and outlet, the "direction switch" is set to the corresponding position, and the pump begins to operate in this set direction.

If you want to stop running, just switch the "direction switch" to the middle.

When the need for full-speed operation, as long as the "full-speed switch" can be pressed, at this time the digital display "FULL", the machine runs at the highest speed. This function is mainly used for fast filling or rapid emptying.

Notice 1： The rotational speed is rpm, that is, how many revolutions per minute. No matter whether the machine is in operation, the speed can be adjusted.

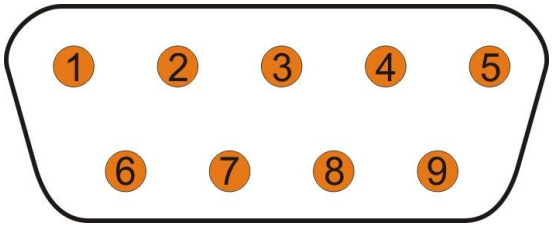
Notice 2： Fast liquid filling or emptying must be combined with "directional switch" and "full speed switch".

V. External control explanation

This series of peristaltic pumps can be operated and controlled by panel switches and potentiometers, and can also be controlled by level, current and communication.

1. External control interface

A DB9 interface on the back panel is the external control interface, and the internal pin sequence is as follows:



The external control interface is defined as follows:

Interface	colour	Definition
1	**Brown**	**+5V,** For external use, the current is less than 100mA.
2	**Red**	**GND,** Common ground wire.
3	**Orange / Pink**	**F/R,** Turn the direction control signal.
4	**Yellow / milk white**	**+12V,** For external use, the current is less than 100mA.
5	**green**	**Iin,** Current input (4 ~ 20mA).
6	**Blue**	**A,** RS485 communication A terminal.
7	**purple**	**B,** RS485 communication B terminal.
8	**gray / Black**	**REM,** Analog quantity enable port.
9	**White**	**S/S,** Start / stop signal access.

2. External control connection

2-1 External control connection

Interface 2 (GND) is Common ground wire，A low level signal (or 2 interface and 8 interface short) pump enters the external control state on the interface 8 relative to the interface 2, At this point, the speed is controlled by the current signal (4-20mA) added with interface 5 (relative to interface 2), and the control ratio is inversely proportional.

Notice 1： "Inverse proportion", that is, the greater the current, the lower the pump speed (flow). "Proportional", that is, the greater the current, the higher the speed (flow) of the pump.

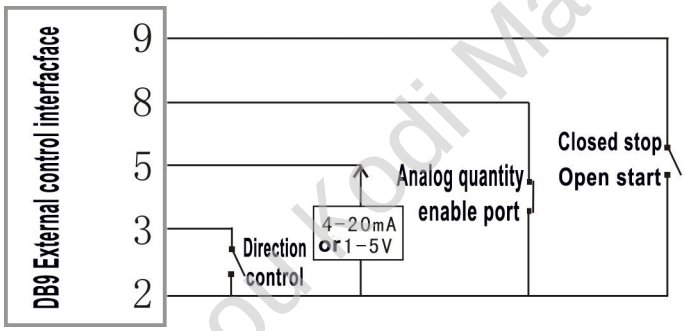
Notice 2： If you need proportional control, you can customize it.

Notice 3: If 0 ~ 5V voltage is needed for control. It requires that the control circuit has strong driving ability (through operational amplifier or direct power control). It is not possible to control the voltage directly by a larger potentiometer, because there is a 250Ω resistor between the inner interface 5 and the ground, which will produce a voltage divider.

The rotation direction can be controlled by adding a high level (equivalent to interface 3 and interface 2 open circuit, reversal) or a low level (equivalent to interface 3 and interface 2 short connection, forward rotation) from interface 3 to interface 2.

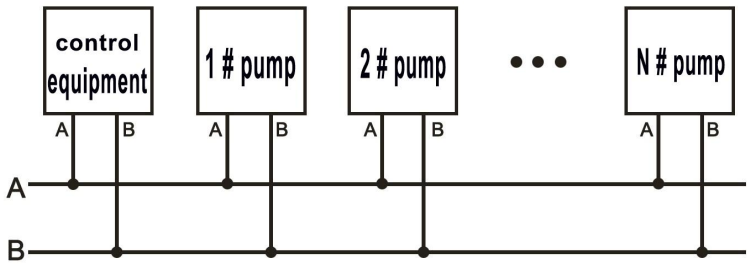
Start/stop can be controlled by adding a high level (equivalent to interface 9 and interface 2 open circuit) to interface 9 relative to interface 2 to start or low level control (equivalent to interface 9 and interface 2 short connection) to stop.

The typical application connection diagram is as follows:



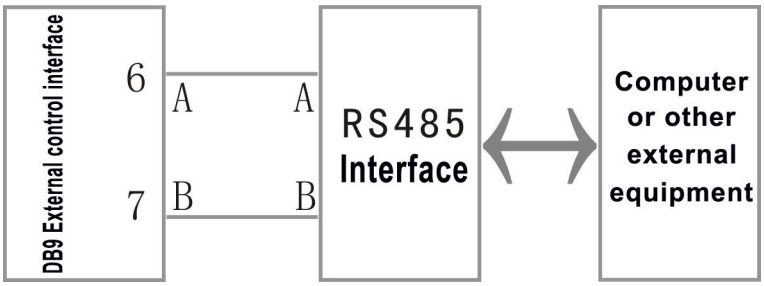
2-2 Communication connection

In some applications, remote control of the pump is required. The interface 6 (A) and interface 7 (B) of the external control interface can be connected out. The control system consists of the following figure:



Notice：1≤N≤16, when there are multiple pumps, the address number should be set to control. Address can be set by communication. Method see communication protocol -《peristaltic pump serial remote control interface requirements》.

The typical application connection diagram is as follows:



VI Maintenance & Repair

1. Product maintenance

Ø If the peristaltic pump is not used for a long time, the hose should be removed.

Ø The product should be kept clean and cleaned with soft cloth and water.

2. Product repair

Familiar with and master the correct operation of the product, external connection mode and working conditions to eliminate human-caused failures.

Common failures and troubleshooting are listed below.

Failure phenomenon	Failure cause	Failure recovery	Remarks
After turning on, the fan does not turn, and the digital tube does not show.	Whether there is electricity in the power socket, whether the power plug is falling off, whether the fuse is loose or fusing.	Re-plug and reinstall or replace the fuse; note that the fuse must be selected according to the specifications.	Be sure to check and determine what causes the fuse to burn.
After turning on, the fan turns and the digital tube is displayed correctly, but the pump wheel does not turn.	Check that the pressure on the pump head is too tight so that the shaft is stuck; check whether the connecting wires of the motor are inserted.	Re install the pressure block of the pump head as required; insert the plug.	In addition, there are problems on the PCB, preferably with suppliers or companies.

The pump wheel is rotating, but it can not transport liquid (or gas).	Check whether the hose is crushed or not, and whether the hose is damaged or leaked.	Adjust the pipe clamp on both sides of the pump head; replace the new hose.	
The number of digital display does not vary with potentiometer and the toggle switch does not work.	Check whether the position of the external control / internal control switch is correct, whether the switch is in contact with bad or damaged.	The switch is placed in the correct position; the replacement toggle switch is replaced.	
When working, the hose slides along one side of the roller.	Check whether the card is stuck and stuck.	Adjust the pipe card and clip it well.	

VII After-sale Service

1、This product is free of maintenance within one year from the date of purchase.

2、After the warranty period, if the user cannot handle the trouble by himself, please contact the distributor or our company for preferential maintenance and service.

3、The following causes are not part of the warranty service:

self-refitting, overload operation, improper maintenance, the running environment does not conform to the product specification, work beyond voltage range and fail to connect correctly and so on.