

Industrial Peristaltic Pump

Cat. No. BT3001

Thanks for choosing the BT Lab Systems Industrial Peristaltic Pump. This operational manual describes the function and operation of the instrument. To ensure proper use and to avoid serious injuries, please read this manual carefully before operating the instrument.

PERISTALTIC PUMP PRECAUTIONS

- The hose may crack due to wear, which can result in liquid leaking and cause harm to the human body and equipment. Therefore, checking the hose regularly and replacing it when necessary is essential.
- If the peristaltic pump is not working, loosen the pressure block of the hose or remove it to prevent plastic deformation and inner wall adhesion, which can block the hose and reduce its service life.
- Keep the roller of the pump head clean and dry to avoid accelerating wear and shortening the service life of the hose, which can lead to premature damage to the roller.
- Some pump heads and drive surfaces are not resistant to organic solvents and highly corrosive liquids. Take special care when using them.
- When maintenance or repair is needed, please turn off the power and unplug the unit.
- As the peristaltic pump has a metal shell, ensure that the ground wire of the power cord is reliably grounded before use to prevent leakage accidents.
- When installing an external control device, please turn off the driver power.
- If maintenance is required, remove the power cord from the device and wait at least one minute before conducting any maintenance operations.

INTRODUCTION

Basic peristaltic pumps are commonly used for filtration purposes. BT Lab Systems offers a wide variety of pumps to choose from.

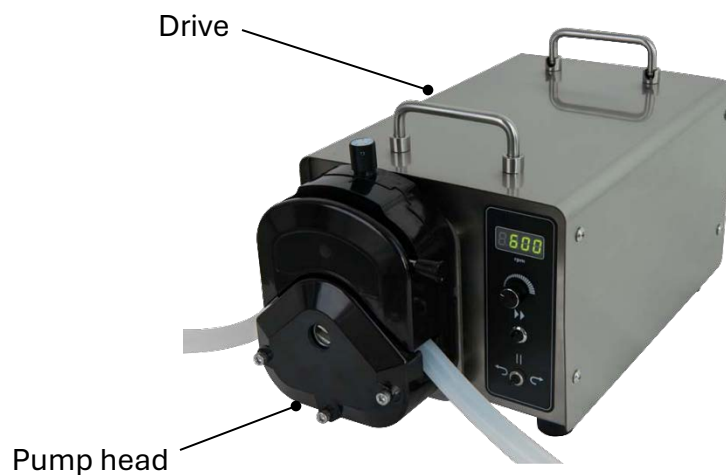
Our Industrial Peristaltic Pump has a simple interface enabling easy setup and operation, saving time and effort.

KEY FEATURES

- Utilizes a high-torque, maintenance-free DC brushless motor drive.
- Features speed display, flow display, and timing and quantitative functions.
- The peristaltic pump can be controlled through the external control interface to manage the speed, start-stop status, and operating direction.
- Equipped with a full-speed button for quick pipe filling and emptying.
- Display is located on the front panel for easy operation.
- The RS485 communication utilizes the Modbus protocol, which is easy to debug and use.

STANDARD CONFIGURATION

The peristaltic pump comprises two parts: a drive and a pump head, which are fixed together to form a single unit.



TECHNICAL SPECIFICATIONS

Normal Operating Conditions

- Ambient Temperature: 0°C – 40°C
- Relative Humidity: <80%

Basic Parameters

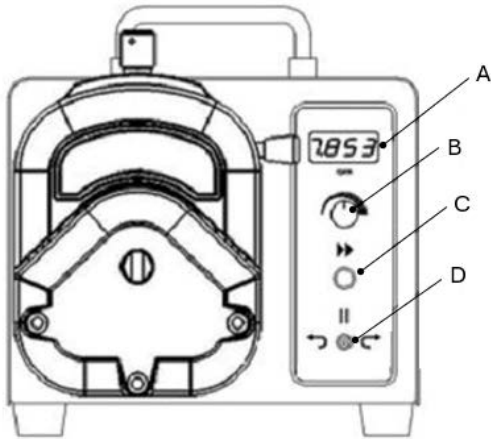
Model	BT3001
Speed Range	4 – 600rpm
Speed Resolution	1rpm
Display	LED
Power Supply	AC220V, 50/60Hz or 110V, 60Hz
Power Consumption	<500W
External control input interface	0 – 10kHz, 0 – 5V, 0 – 10V, 4-20mA
Timing error	0.1s
Time display resolution	1s
Timing range	1 sec – 99H:59M:59S
Maximum Reference Flow Range	12000ml/min
Operating modes	Speed control, Flow rate, Timing
External control function	Speed, Start-stop and direction control
Communication function	RS485 (using universal Modbus protocol)
Dimension (L x W x H) (mm)	434 x 242 x 235
Driver Weight	13kg
IP rating	IP31

Pump Head	Tubing Size	Flow range (ml/min)	No. of channels
YZ35	73	400 – 6000	1
	82	800 – 12000	

- The proper selection of pump heads and hoses is crucial for improving flow accuracy and distribution accuracy.
- The flow rate listed in the table above represents the flow rate at 600rpm, using a silicone tube. Hoses made of different materials are available, each with its own flow rates not included in this table.
- The relationship between the flow rate and speed is approximately linear.

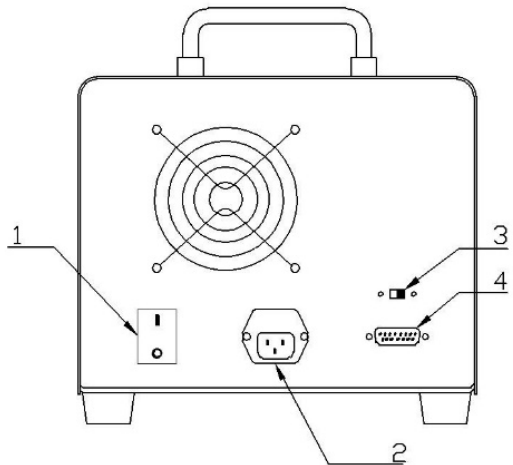
STRUCTURE

Front Operation Panel



Description	Function
A. 4-digit LED screen	Displays the current speed and working mode <ul style="list-style-type: none"> • Flickering indicates parameter setting mode interface • Four horizontal lines indicate the driver is operating at full speed
B. Rotary encoder knob	Press and hold to enter the Settings mode. Rotate to cycle between different parameters and to adjust values. <ul style="list-style-type: none"> • Clockwise to increase • Counterclockwise to decrease
C. Prime Button	In Flow rate or Speed mode, this key will turn on/off the full-speed function for rapid filling or emptying In Timing mode, this key is used to start or pause the operation
D. Rotation switch	Set the motor running direction <ul style="list-style-type: none"> • Left – runs counterclockwise • Center – Stop • Right – runs clockwise

Rear Panel



Description	Function
1. Power Switch	Turns the machine on and off
2. Fuse and Power Socket	Supplies power to the unit using power cable. 2 fuses built into the power socket. One spare fuse in slot.
3. External Control Mode	To switch between Manual and External Control mode.
4. External Control Interface	Uses DB15 Male Connector

OPERATION

Settings Module

There are two modules for setting the parameters.

Module Code	Module	Settings
b	Pump Head Configuration	Pump head and pump hose
d	Operation Mode	Speed mode, flow rate mode, timing mode

Setting Parameters

Using the rotary encoder knob, press and hold to enter the settings interface.

Pump Head Configuration

Set the unit configuration by selecting the pump head model and hose #.

Parameter Code	Settings
b	Pump head model
P	Pump Hose Selection

NOTE: The hose specification set is used to calculate the flow rate. If the tube number set matches the hose installed in the pump head, the displayed value will align with the actual flow rate when working in flow mode. If there is a mismatch, there will be a significant deviation between the displayed and actual flow rates.

Operation Modes Module

Select the method of operation and set the desired value.

Parameter Code	Settings		
S	Speed mode		
F	Flow rate mode		
E	Timing mode	h	Hour
		l	Minutes
		ll	Seconds

Speed mode

1. With the rotary encoder knob, adjust the speed.
2. Use the directional control switch to select the operation direction, change direction, or stop.
3. Press the Prime Button ► to activate the full speed function. Press again to deactivate and return to normal set speed.

Flow rate mode

1. With the rotary encoder knob, adjust the flow value. The flow rate unit is L/min. The maximum adjustable flow rate varies depending on the hose used.
2. Use the directional control switch to select the operation direction, change direction, or stop.
3. Press the Prime Button ► to activate the full speed function. Press again to deactivate and return to normal set speed.
4. Press the rotary encoder knob for a quick view of the current speed. The display will automatically return to the flow rate after 3 seconds.

Timing mode

1. Set the running direction prior to setting parameters for timing mode.
2. The parameter values for setting timing mode will be in the sequence of hours, minutes, then seconds. The speed and flow rate cannot be set or adjusted.
3. Press the rotary encoder knob for a quick view of the current speed and flow rate. The display will automatically return to the timing countdown after 3 seconds.
4. Press the Prime Button ► to **PAUSE** the timed operation. Press again to continue operation.
5. Move the direction control switch to the center to manually **STOP** and end the operation.

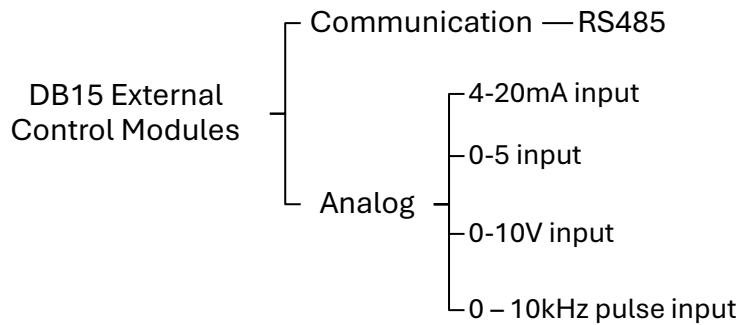
or

When the timing countdown is complete, the operation will automatically stop.

NOTE: *After the operation is automatically or manually stopped, the next calculation will not be added to the total. The timing is still based on the fixed time value.*

EXTERNAL CONTROL INTERFACE

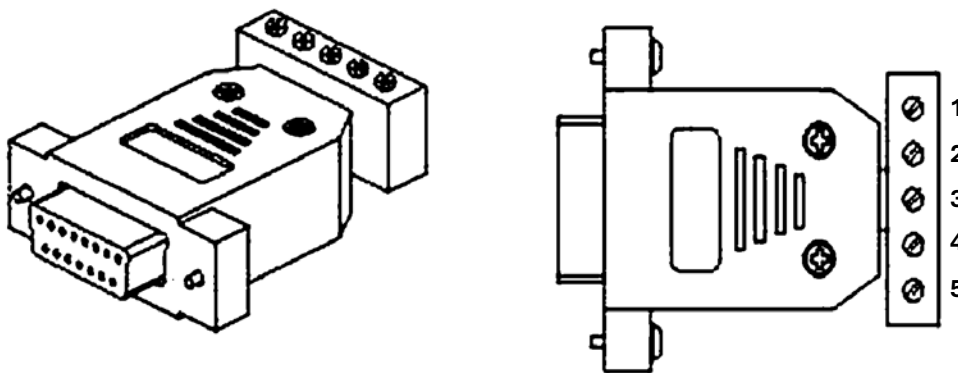
The external control interface utilizes a standard DB15 male connector.



External Control Module

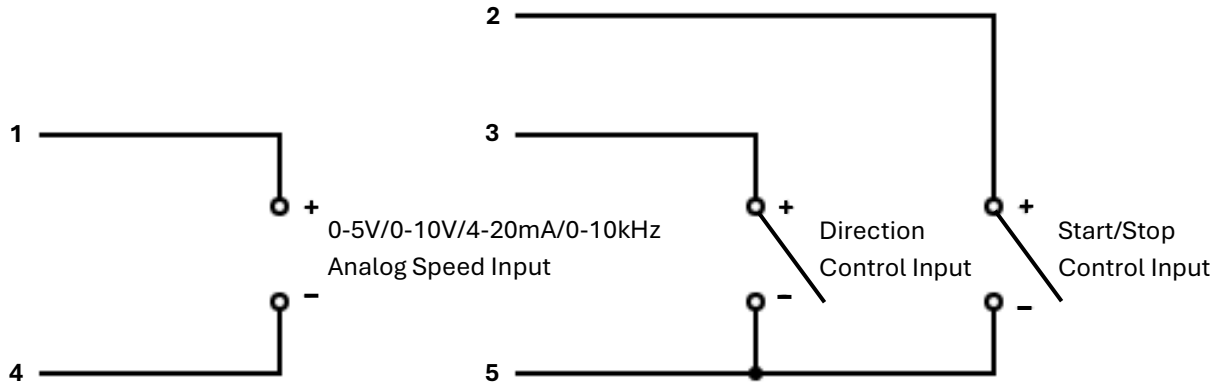
To activate the external control function, switch the driver's external control switch to "on", and then connect the corresponding external control module to the external control interface.

When in the external control state, the key buttons functionality on the operation panel will be disabled.

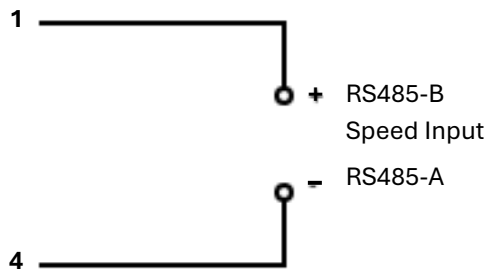


Terminal #	Functional Specifications
1	Analog input or RS485-B to control pump speed.
2	External start/stop control input. Open circuit, the pump runs. Short circuit, the pump stops.
3	External direction control. Open circuit, the pump rotates clockwise. Short circuit, the pump rotates counterclockwise.
4	Analog ground (AGND) or RS485-A to control pump speed.
5	Common terminal for external start/stop and direction control.

Analog Control Module Wiring Diagram



RS485 Communication Module Wiring Diagram



WARRANTY

Our company guarantees that this unit is warranted against defective material and workmanship for a period of one year from the date of shipment. We will repair or replace the defective equipment returned during the warranty period free if the equipment has been used under normal laboratory conditions and in accordance with the instruction in this manual. The following defects are specifically excluded:

1. Damage caused by accident, misuse, or abuse.
2. Damage caused by disaster.
3. Repair or modification by anyone else without authorization.
4. Corrosion due to the use of improper solvent or sample.
5. Defects caused by improper operation.
6. Use of fittings or other spare parts supplied by different manufacturers.

This warranty does not apply to platinum wire and all the accessories.

A return authorization must be obtained from us before returning any product for repair on a freight prepaid basis.

For any inquiry or request for repair service, please contact BT Lab Systems via the email below.

E-Mail: info@BTLabSystems.com

TECHNICAL

BT Lab Systems offers technical support for all its products. If you have any questions about the product's use or operation, please contact BT Lab Systems at the following info.

E-Mail: info@BTLabSystems.com