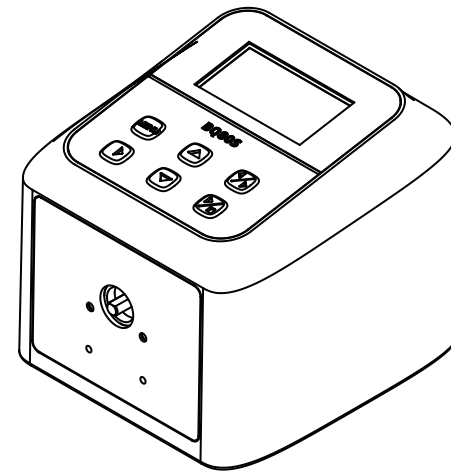


BQ80S

Speed Variable Peristaltic Pump Operation Manual



Safety Precautions



Important information:

Be sure to read the manual carefully before operation!

	This icon warns: Keep fingers away from moving parts.
	This icon warns: Be careful.
	This icon warns: Be careful, the surface is hot.
	This icon warns: Be careful, electric shock hazard.
	This icon warns: To recycle this product.
	This icon warns: Personal protective equipment (PPE) must be worn.

Danger:

	Please use the same power supply as that on the nameplate of the machine, otherwise the equipment will be damaged!
	Please do not disassemble the shell or modify the interior of the equipment by yourself, otherwise it may cause malfunctions or even electric shock accidents!
	When installing and disassembling the pump tube, please turn off the power first and do not approach the rotating roller to prevent fingers and clothing from getting entangled in the mechanical mechanism!
	When installing and disassembling external control devices, please turn off the power first to prevent electric shock accidents or damage to the equipment!



Please connect the protective area of the machine to the ground, otherwise there is a risk of electric shock, electromagnetic interference, or induced static electricity!



If it is used to transport dangerous liquids, special operating procedures must be developed for this liquid, and personnel must also be prevented from being injured during use.



This product is not suitable for explosion-proof environment, and it should not be used in explosive environment.

Warning:



Before using, please confirm that the transmitted liquid will not react chemically with the tube or pump head, otherwise it will damage the tube or pump head. If unsure, please consult our engineers.



The tube is a vulnerable part, please check it regularly. Our company is not responsible for the loss caused by tube damage, especially the leakage of toxic, harmful and valuable liquids!



Due to the fact that the actual working environment conditions (including temperature, humidity, power supply voltage, etc.) exceed our technical specifications and the machine is damaged, our company is responsible for the paid warranty, but we will not be responsible for any other damages caused by it!



The primary protection for the operator against injury from the moving parts of the pump is provided by the pump head safety device. Please note that safety devices vary from product to product, depending on the model of pump head. See pump head section in manual.



If the pump was running before the power failure, the pump will automatically start when the power is turned back on.

Contents

Peristaltic Pump Introduction	3
Description	3
Applications	3
Functions and Features	4
Components and Interfaces	5
Display Panel and Operating Keypad	6
Keypad	6
Icon Description	7
LCD Display	7
External Control Interface Description	9
Installation Instruction	10
Before Operation	10
Install the Tube	10
Power Connection	10
Operation Instructions	11
Setting Menu	11
System Parameter Setting	13
Mode Switch	14
Mode Switch	15
External Control Mode	16
Time Dispensing Mode	18
Level 1 Mode (Original Foot Switch Mode)	19
Level 2 Mode (Original Level Mode)	21
Communication Mode	22
Malfunction and Maintenance	24
Daily Maintenance	24
Maintenance Worksheet	25
Malfunction Solutions	26

Dimensions	27
Ordering Information	28
Optional Accessories Table	28
Naming Rules	28
Technical Parameters	29
External Control Input and Output Performance	30
Flow Rate Chart of the Pump	31
Disclaimer	32

Peristaltic Pump Introduction

Peristaltic pump is a safe and reliable fluid transmission equipment, the fluid only contacts with the inner wall of the tube line, through squeeze the tube to realize the fluid transmission. Its unique no-valve, no-seal, tube line integrated transmission design, Ensure the cleanliness of the fluid, reduce the risk of leakage, and make the fluid more reliable, safe and clean way of transmission.

Working Principle

The tube fits between the roller and the pressure block, forming a seal at the point of contact when squeezed. As the roller rotates and advances along the tube, the sealing contact advances with it. As the rollers pass, the tube returns to its original shape, creating a vacuum that draws in liquid. Before the roller reaches the end of the pressure block, a second roller starts compressing the tube at the beginning of the pressure block, isolating the fluid between the two compression points. As the first roller clears the pressure block, the second roller continues to expel the liquid through the discharge port of the tube. At the same time, a new partial vacuum is created behind the second roller, sucking in more liquid from the inlet. There is no back flow and siphoning, and the pump effectively seals the tube when not in use, so there is no need for a separate valve.

Description

BQ80S speed variable peristaltic pump not only has the basic functions of start/stop, speed control, full speed and forward and reverse rotating, but also the addition of the LCD display and multi-segment dispensing operation and anti-drop function, but also through the MODBUS protocol of the RS485 communication can be easily connected to other equipment control.

BQ80S flow range: 0.0035-34mL/min, speed range 0.1-80rpm.

Applications

- The pump does not touch the liquid.
- No valve blockage.
- The inner surface is smooth and easy to clean.
- The suction lift can reach up to 8 meters of water column.

- Low shear force, can be used to transfer emulsions or liquids containing foam, cells, etc.
- Suitable for transporting liquids containing gases, magnetic beads, or suspensions containing small particles.
- It is suitable for accurate metering and quantitative feeding, and high filling accuracy can be obtained by selecting appropriate tube diameter and filling efficiency.
- Suitable for transporting viscous liquids.
- The liquid only comes into contact with the tube.
- If use food and medical grade tube, this pump can be used for food and medical transmission and filling.
- Replacement tube of special material to transfer abrasive liquids.

Functions and Features

- Chinese and English LCD screen display, key operation.
- With forward and reverse rotating, start and stop, speed regulation and full speed functions.
- Run time, interval time, cycle time can be set.
- High-precision speed control.
- External analog quantity to adjust the speed, analog quantity 0-5V/0-10V/4-20mA, software setting switch.
- External control signal controls start and stop, forward and reverse rotating, external control signal 5-24V wide range input, photoelectric isolation.
- RS485 communication, support MODBUS communication protocol, a variety of communication parameters can be set.
- The circuit board is sprayed with conformal coating to achieve the effect of dustproof and moistureproof.
- Super anti-interference characteristics, wide voltage design, suitable for complex power supply environment.
- Plastic shell, easy to clean, strong anti-interference ability.

Components and Interfaces

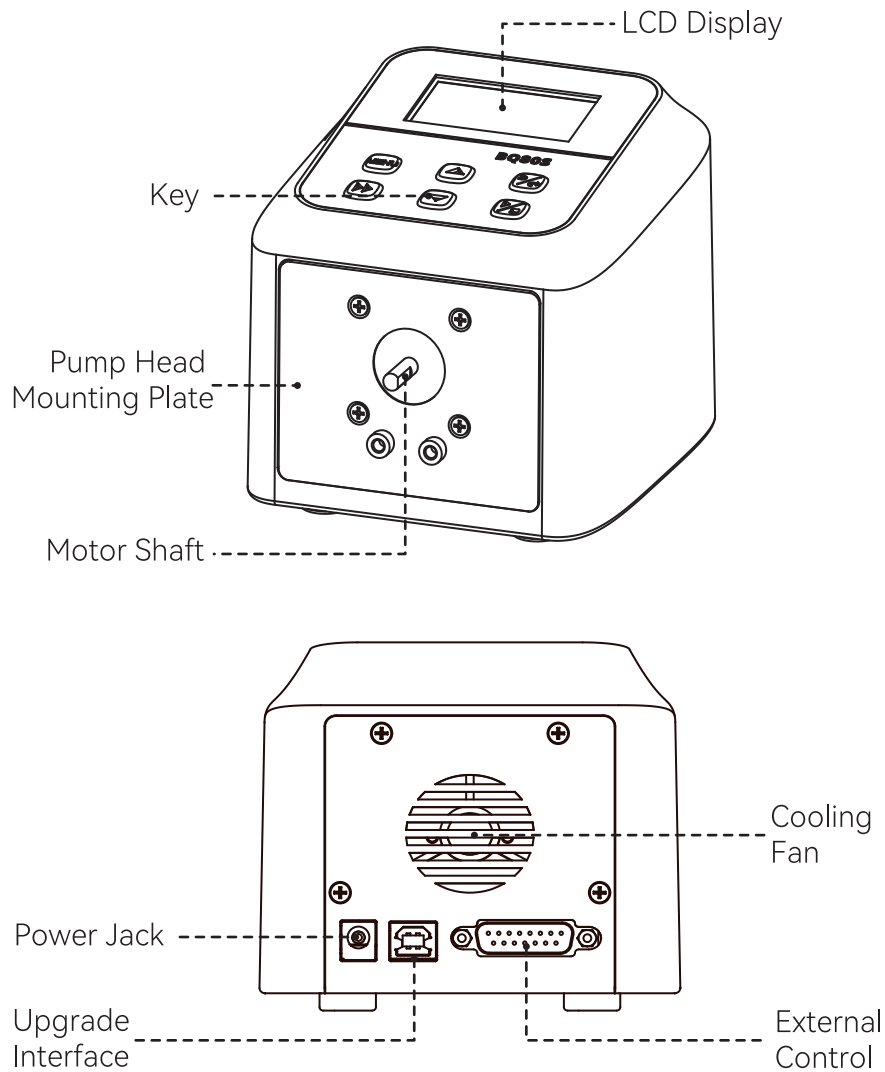


Figure 1 Components and Interfaces

Display Panel and Operating Keypad

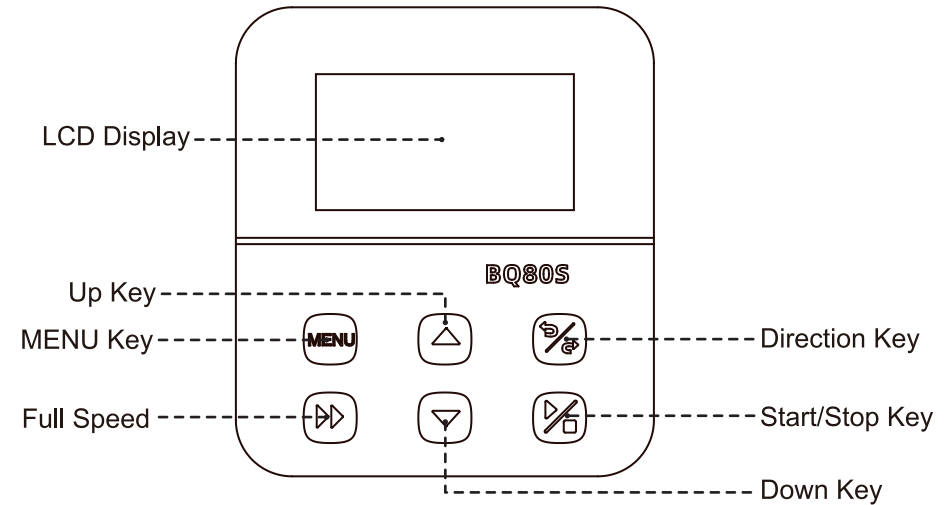


Figure 2 Display Panel and Operation Keypad

◆ Keypad

-  : **Up Key:** Value increase key. Press the key once, the lowest digit of the value will increase by 1, long press the key, the value will increase rapidly.
-  : **Down Key:** Value decrease key. Press the key once, the lowest digit of the value will be reduced by 1, long press this key, the value will decrease rapidly.
-  : **MENU Key:** In the main interface, press this key to enter the menu interface. In the menu interface, press this key to return to the main interface, it is invalid during operation.
-  : **Full Speed Key:** Press this key to switch between the highest speed and the original state.
-  : **Direction Key:** Control the direction of pump operation, switch between forward (clockwise) and reverse (counterclockwise).
-  : **Start/Stop Key:** Control the start and stop of the pump, press this key in the menu mode to enter the submenu.

◆Show Icon Description

Icon	Function	Icon	Function
	Start		Stop
	Pause		Full speed
	Clockwise rotation		Counterclockwise rotation
	Tone on		Tone off
	Locked		Unlocked
	Show pump number in communication		Communication is disconnected

Table 1 Description of Display Icons

◆LCD Display

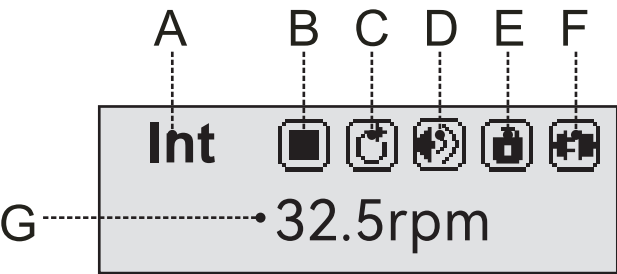


Figure 3 LCD Display

A. **Control State:** Display the current control mode, press to switch, which are internal control, external control, dispensing, level 1, and level 2 in turn.

- Internal control: Through the key control on the panel, and the external pulse signal controls the start and stop.
- External control: The speed is controlled by an external analog quantity, and the start/stop and rotating direction are controlled by an external level signal.
- Dispensing: Set the running time, interval time, and cycle times to realize the regular transmission of liquid.
- Level 1 (original foot switch mode): The start and stop are controlled by an external level signal, and the speed and rotating direction are controlled by the panel.
- Level 2 (original level mode): The start/stop and rotating direction are controlled by an external level signal, and the speed adjustment is controlled by the panel.

B. **Running State:** Display the current running state.

Stopped state Running state Paused state

C. **Direction of Rotation:** Shows the direction in which the pump rotates.

Clockwise Counterclockwise.

D. **Tone:** The state of the key prompt tone is displayed here.

Tone on Tone off

E. **Lock State:** Display whether the current state is locked. In the locked state, only the start and stop keys on the panel work, and other keys are invalid. In the main interface, press and hold the direction key to enter the locked state, long press the start and stop key to unlock.

Unlocked state Locked state

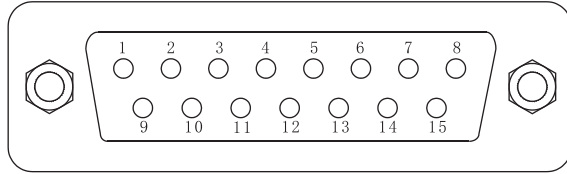
F. **Communication State:** Displays whether the communication is currently in progress.

Communication is disconnected

#1 pump number displayed in communication #1

G. **Speed Display:** Display the current rotational speed, the unit is RPM. When >>>>>> is displayed, it is at full speed.

External Control Interface Description



DB15 Pins	English Notes	Description
1	ADC_W	The positive input of external analog signal
2	B	Communication interface, B pole of RS485
3	A	Communication interface, A pole of RS485
4	VCC_W	External DC power input
5	--	--
6	CW_W	External input signal to control direction
7	--	--
8	COM	External commons
9	AGND	Negative input of external analog signal
10	+12V	Internal +12V power supply output
11	GND	Internal power ground
12	--	--
13	RS_W	External input signal to control start/stop
14	PWM_W	External pulse signal input
15	--	--

Table 2 Definition of External Control Pins

	Note: Follow the legend pins to provide the correct signal. Do not exceed the specified range of the signal value. Please pay attention to the specified voltage range when connecting to an external power supply, otherwise it may cause permanent damage and will not be covered by the warranty.
	Note: Low voltage signals must be isolated from mains power. Use a separate shielded ground input wire.
	Note: Use a qualified protective wire sleeve at the end of the multi-strand cable, otherwise there will be a risk of damage to the equipment.

Installation Instruction

◆ Before Operation

- Please compare the packing list to check whether all accessories are wrong or damaged when you open the outer package of the pump. Please contact Enterprise or agent in time, if you find any problems.
- Read the operation manual carefully, and keep it at hand, or keep it in a fixed place for reference at any time.
- Place the pump on a level table with the rear at least 20 cm away from obstacles.

◆ Install the Tube

Pull the pump head lever to lift up the pressure block, put the tube into the pump head smoothly and straighten it, pull the lever in the opposite direction to the horizontal position, and the tube is installed.

◆ Power Connection

Insert the supplied power cord into the power socket of the power adapter, and insert the plug of the power adapter into the power socket on the back of the drive.



Note: Make sure all power supply wires are rated for equipment wattage.



Note: The pump must be located so that it can be easily disconnected from the power source when the equipment is in use.



Note: Please use the same power supply as that on the nameplate of the machine, otherwise the equipment will be damaged!

Operation Instructions

◆ Setting Menu

In the main interface, press  to enter the menu setting interface, in the setting interface, press  to select the parameter, press   to enter the submenu, press   in the submenu to adjust the parameter, if you want to return to the main interface, press and hold  to return or press  continuously until you return to the main interface. Refer to figure 4 for specific operations:

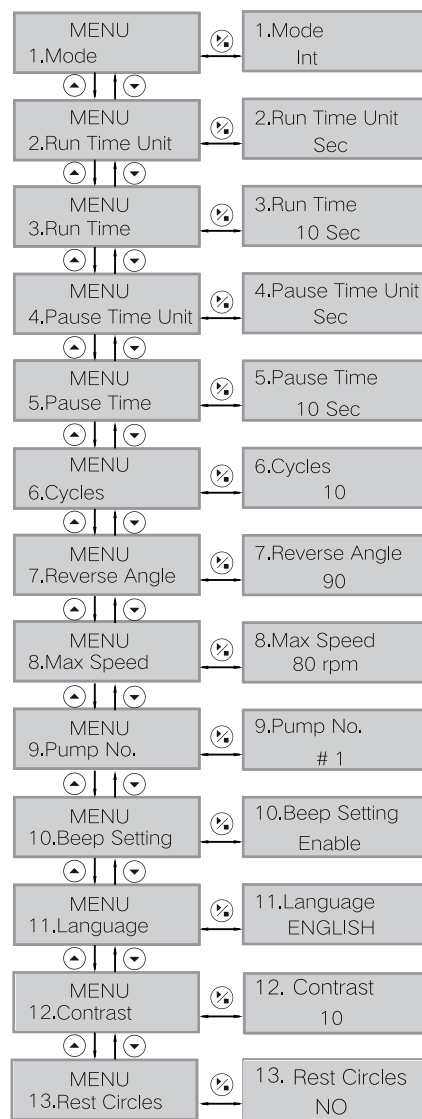


Figure 4 Menu setting

1. Operation mode selection: There are five modes: Internal Control, External Control, Timing, Level 1 and Level 2.
2. Run time unit: In the timing dispensing mode, set the running time unit, and you can set days, hours, minutes and seconds.
3. Dispensing time: In the timing mode, set the running time, with the setting range of 0.1-999 seconds \ minutes \ hours \ days
4. Pause time unit: In the timing dispensing mode, set the pause time unit, which can set days, hours, minutes and seconds.
5. Pause time: In the timing dispensing mode, when the set number of cycles is not 1, the pause time between two adjacent operations, with the set range of 0.1-999 seconds \ minutes \ hours \ days
6. Cycles: In the timing dispensing mode, set the number of times to repeat the timing operation. Set the range 0-999 times. When the setting value is 0, the cycle is infinite until you press  stop. When it is set to other values, it will stop automatically after completing the set cycle times.
7. Reverse angle: When the pump is stopping, prevent the liquid from dripping and rotate in the opposite direction. The setting range is 0-720 degrees. There is no suction back at 0 degrees.
8. Maximum speed: In the external control mode, set the upper limit of analog control speed.
9. Pump No.: In the communication mode, set the communication address of the pump.



Note: The drive needs to be restarted to take effect.

10. Beep setting: Set whether to turn on or off the key prompt tone.
11. Language setting: Switch between Chinese or English.
12. Contrast setting: set the contrast of LCD.
13. Reset circles: After replacing a new tube, reset the tube life and recalculate the tube life.

◆System Parameter Setting

In the main interface, press  +  to enter the parameter setting interface of the system. In this interface, press  +  to select advanced parameters, press  to enter the submenu, and press   to adjust the parameters in the submenu. If you want to return to the previous menu, press . If you want to return to the main interface, press . Refer to Figure 5 for specific operations:

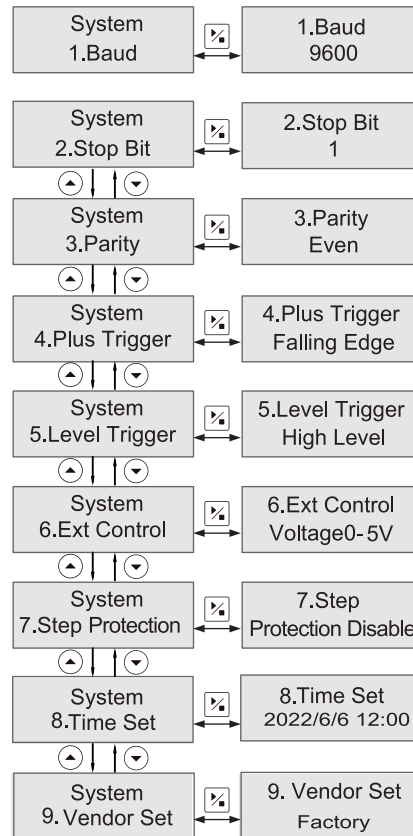


Figure 5 Flow Chart of System Parameter Setting

1. Baud Rate: In the communication mode, set the size of the baud rate, which can be set to 4800, 9600, 19200 and 38400 (the default is 9600).
2. Stop Bit: In the communication mode, set the size of the stop bit, Which can be set to 1 or 2 (the default is 1).
3. Parity: In the communication mode, set the type of parity check method, which can be set to odd parity, even parity and no parity (the default is even parity).
4. Pulse Trigger Mode: In internal control or dispensing mode, set the trigger

type in which the driver is controlled by an external pulse signal to start and stop. It can be set to rising edge trigger or falling edge trigger (the default is falling edge trigger).

5. Level Trigger Mode: In the external control or level mode, set the level trigger type when the drive is controlled externally, which can be set as high level trigger or low level trigger (the default is high level trigger).
6. Ext Control Mode: In the external control mode, set the parameter type of the drive speed controlled by the analog quantity, which can be set to voltage mode 0-5V, voltage mode 0-10V, current mode 4mA-20mA (with the change of the external control analog quantity, the drive speed will change linearly).
7. Step Protection*: The switch setting of the drive losses speed protection, which is turned off by default (The WIFI version has this function).
8. Time Set: Customers can customize the date and time when using, press  to change the set parameters, press   to adjust the time, press  to save and exit.
9. Vendor Set: Set the display information of the device, there are three options: "English only" (display full English), "factory setting" (default manufacturer information), and "customer setting" (customer-defined information).

◆Mode Switch

- Turn on the power switch, the LCD screen will display a welcome message and enter the main interface.
- Press   to select the mode. This is shown in Figure 5 below:

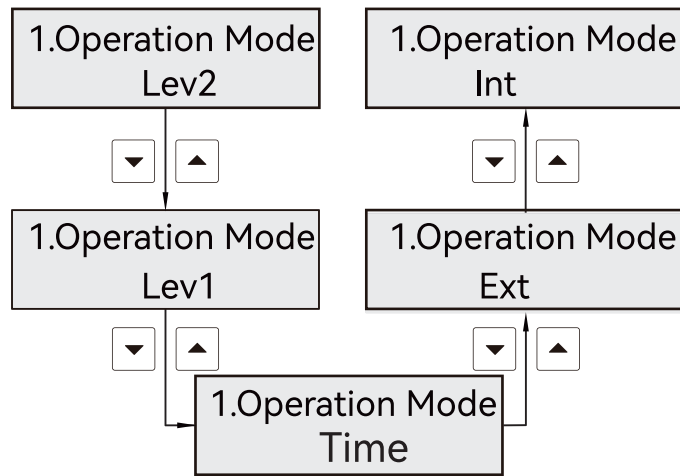


Figure 6 Mode switching

◆ Internal Control Mode

The operation of the pump is controlled by the keys on the front panel of the pump.

- Turn on the power switch, LCD display and enter the main interface
- Switch mode to internal control mode

- Press ▲ ▼ key to adjust the speed to be set
- Press ↺ to adjust the direction of rotation
- Press ⏻ to start or stop the pump
- Press ▶▶ Key, the pump runs at the highest speed

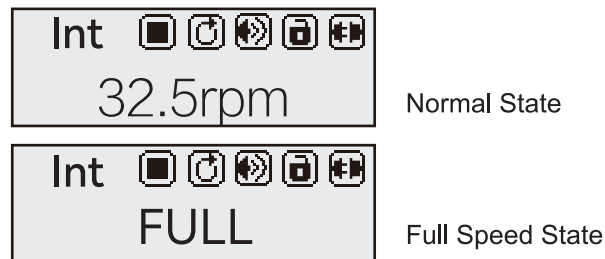


Figure 7 Internal control mode

◆ External Control Mode

The speed is controlled by the external input mode analog quantity, and the start/ stop and direction are controlled by the external level. Control panel keys do not work.

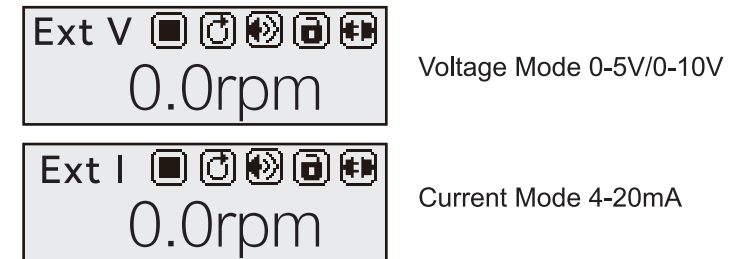


Figure 8 External control mode

- When the power is cut off, connect the circuit according to the wiring diagram below, and connect the DB15 interface to the back interface of the pump.

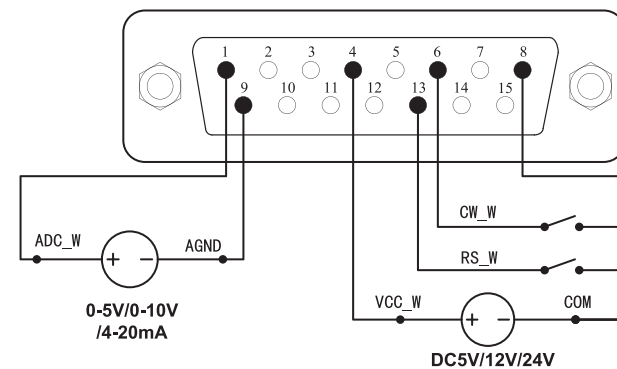


Figure 9 Wiring Diagram for Connecting External Power Supply in External Control Mode

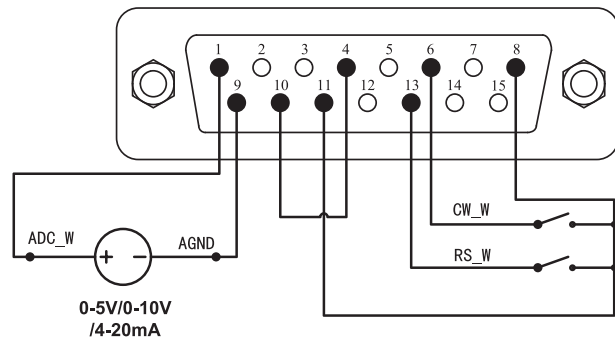


Figure 10 Wiring Diagram for Connecting Internal Power Supply in External Control Mode



Note: Follow the legend pins to provide the correct signal. Do not exceed the specified range of the signal value. Please pay attention to the specified voltage range when connecting to an external power supply, otherwise it may cause permanent damage and will not be covered by the warranty.



Note: Low voltage signals must be isolated from mains power. Use a separate shielded ground input wire.



Note: Use a qualified protective wire sleeve at the end of the multi-strand cable, otherwise there will be a risk of damage to the equipment.

- Turn on the power switch, the LCD screen will display a welcome message and enter the main interface.
- Press **MENU** to enter the running mode, and switch the mode to the external control mode.
- Connecting the switch of the external RS_W, turn on the analog power supply, the pump will change the speed with the change of the analog value, disconnect the switch of the external RS_W, the pump will stop running.
- Disconnecting the switch for external CW_W turns the pump in clockwise direction. Connecting the switch for external CW_W turns the pump counterclockwise.

◆Dispensing Mode

Liquid volume dispensing is performed by dispensing operation.

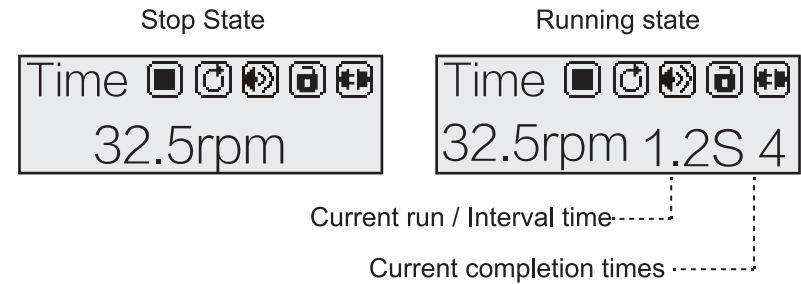


Figure 11 Dispensing Mode

Setting Parameters

- Turn on the power switch, the LCD screen will display a welcome message and enter the main interface.
- Press **MENU** to switch the mode to dispensing mode, as shown in the figure below.
- Press **MENU** to enter the parameter setting interface.
- Set the dispensing unit, running time, interval time and cycle times respectively.
- Back to Home page.

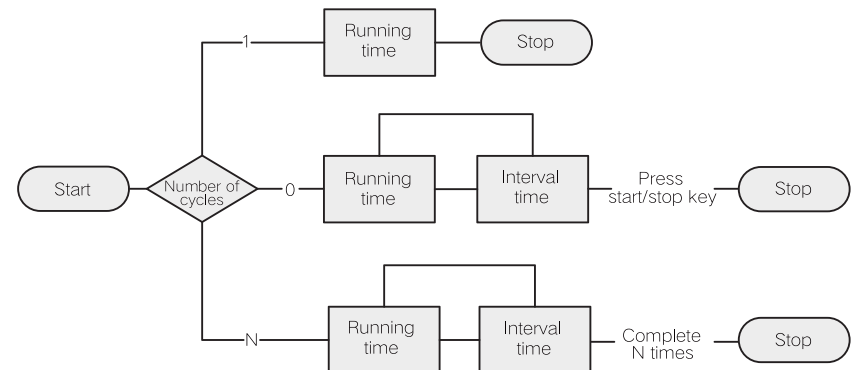


Figure 12 Timing operation flow chart

- Press  to adjust the direction of rotation.
- Press  to run the setting process.
- During the operation, press to stop the operation.
- In time dispensing mode, a foot switch can also be used to start a run.
- During the running, the run time, interval time and number of runs are displayed.

◆Level 1 (original foot switch) Mode

The start and stop of the pump is controlled by external high and low levels.

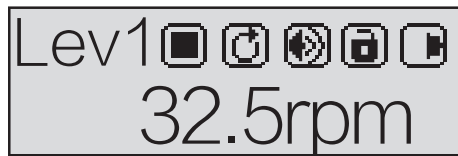


Figure 13 Level 1 mode

When the power is cut off, connect the circuit with reference to Figure 14 or Figure 15, and connect the DB15 interface to the back interface of the pump

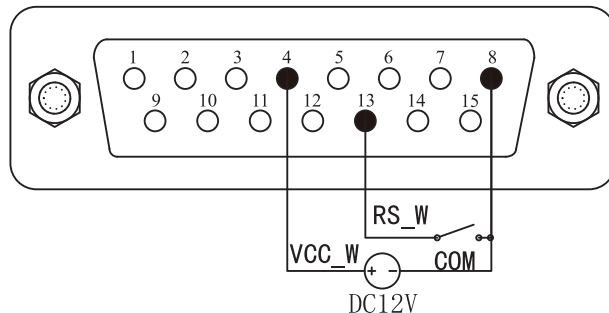


Figure 14 Wiring diagram of level 1
external 12V power supply

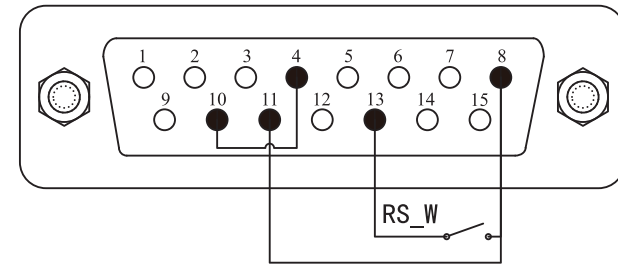


Figure 15 Internal 12V power supply wiring diagram of level 1



Note: Follow the legend pins to provide the correct signal. Do not exceed the specified range of the signal value. Please pay attention to the specified voltage range when connecting to an external power supply, otherwise it may cause permanent damage and will not be covered by the warranty.



Note: Low voltage signals must be isolated from mains power. Use a separate shielded ground input wire.



Note: Use a qualified protective wire sleeve at the end of the multi-strand cable, otherwise there will be a risk of damage to the equipment.

- Turn on the power switch, the LCD screen will display a welcome message and enter the main interface.
- Press  to enter the running mode, and switch the mode to level 1 mode.
- Press  to adjust the direction of rotation.
- Press   to adjust to the speed to be set.
- When switch of the foot switch is connected, the pump runs. When the switch is disconnected, the pump stops.



Note: Use this mode when the dispensing is controlled by an accessory called dispensing controller.

◆Level 2 Mode

The start/stop and direction of the pump are controlled by external high and low levels.



Figure 16 Level mode

When the power is cut off, connect the circuit and connect the DB15 interface to the back interface of the pump with reference to Figure 17 or Figure 18.

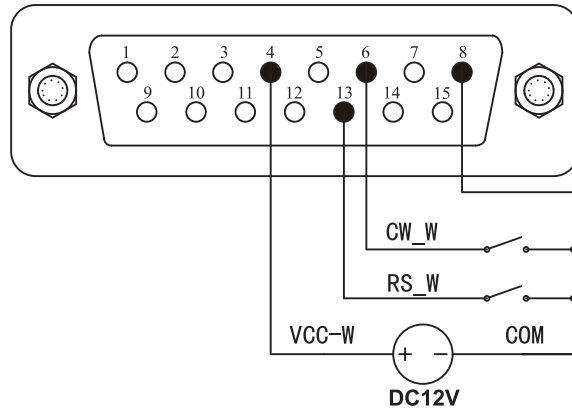


Figure 17 Wiring diagram of external 12V power supply in Level 2 mode

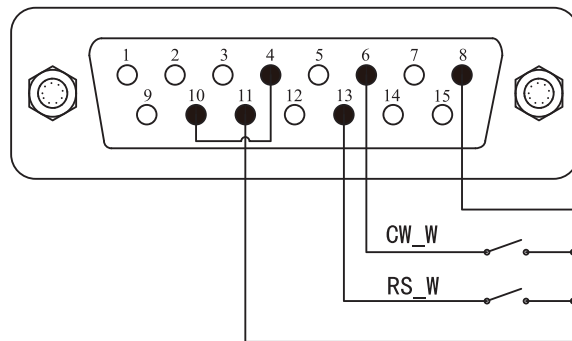


Figure 18 Internal 12V power supply wiring diagram of level 2 mode

- Turn on the power switch, the LCD screen will display a welcome message and enter the main interface.
- Press **MENU** to enter the running mode and switch the mode to level 2 mode.
- Press **▲** **▼** to adjust to the speed to be set.
- Connect the switch of external RS_W, the pump will run according to the set speed. Disconnect the switch of external RS_W, the pump will stop run.
- Disconnect the CW_W switch and the pump runs in clockwise direction. Connect the CW_W switch and the pump runs in counterclockwise direction.

◆Communication Mode

RS485 communication supports Modbus protocol and can control various functions of the pump. For specific parameter addresses and supporting instructions, refer to Enterprise communication technology standards.

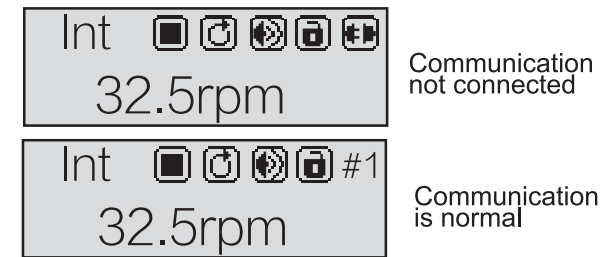


Figure 19 Communication mode

When the power supply is cut off, conduct wiring with reference to figure 20 or figure 21. Then connect the DB15 interface to the back interface of the pump.

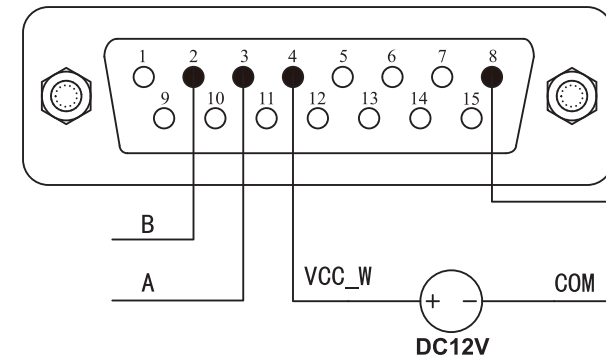


Figure 20 Wiring diagram of external 12V power supply for communication

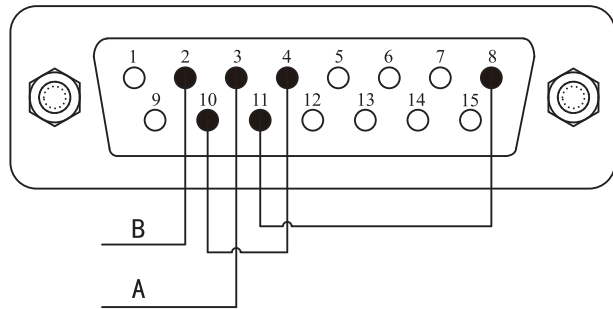


Figure 21 Communication Internal 12V Power Supply Wiring Diagram



Note: Follow the legend pins to provide the correct signal. Do not exceed the specified range of the signal value. Please pay attention to the specified voltage range when connecting to an external power supply, otherwise it may cause permanent damage and will not be covered by the warranty.



Note: Low voltage signals must be isolated from mains power. Use a separate shielded ground input wire.



Note: Use a qualified protective wire sleeve at the end of the multi-strand cable, otherwise there will be a risk of damage to the equipment.

- Turn on the power switch, the LCD screen will display welcome information and display the main interface.
- Press  to enter the running mode, switch the mode to internal control mode or timing mode.
- Control the functions of the pump through communication.
- Press  to stop the pump.

◆Speed Setting

In the main interface, the resolution of the speed is 0.1 in the range of 0.1-80, and the resolution is In the main interface, which can be set by pressing  . Press and hold   can increase or decrease continuously and rapidly.

Malfunction and Maintenance

◆Daily Maintenance

- Regularly check the tube for breakage or loss of elasticity.
- There is a cooling fan behind the peristaltic pump, please do not cover it to avoid affecting heat dissipation.
- Peristaltic pumps can not be flushed with water, if the pump tube rupture during operation, the liquid in the pump head should be dried or dried in time.
- Do not use chemical solvents to clean the peristaltic pump and pump head surface.



Note: Always disconnect the pump from the mains power before opening the pump head cover to change tubes, or performing any assembly, disassembly or maintenance activities.

◆ Maintenance Worksheet

Regular maintenance of the pump according to the maintenance schedule will help reduce damage to pump components and ensure personal and property safety.

Maintenance Tasks	Frequency	Actions After Exception
Check if the pump leaks and damage.	1. Check before starting each time. 2. Daily visual inspection. 3. Periodic inspection during pump operation.	1. Before operating the pump, repair leaks and damage. 2. Replace parts when necessary. 3. Clean up all spilled liquid.
Check for abnormal temperature or noise during pump operation.	1. Daily visual inspection. 2. Periodic inspection during pump operation.	1. Check and replace worn parts.
Do you need to replace the tube	1. Check the condition of tube at most every three days	Please replace the tube in the following situations: 1. When the flow rate is lower than 75% of the original value. 2. When the tube has burst and is badly worn. 3. When the user-defined replacement cycle is reached.
Check pump head and rotor assembly.	1. Regularly check the wheel flexibility every week. 2. Check when replacing tube. 3. Once a year complete inspection for wear and tear, check bearing clearance and function.	1. Worn and damaged surfaces can lead to premature tube failure, replace worn parts promptly

Table 3 Maintenance Work List

◆ Malfunction Solutions

NO.	Malfunction Type	Malfunction Description	Solutions
1	Hardware	No display	1. Check whether the power cord is connected properly. 2. Check whether the fuse is blown. If it is blown, please contact the manufacturer for replacement.
2	Hardware	The motor does not rotate	1. Check whether the flow or speed is set too small, such as 0.1rpm.
3	Hardware	Drive is trembling	1. Check that the pump head screws and plate rod are tightened.
4	Hardware	The motor rotates in only one direction	1. Check that the direction keys are working properly. 2. Check whether the external control direction signal is normal.
5	Hardware	Key does not work	1. Whether it is locked.
6	Hardware	Noisy when the pump is running	1. Around 70 rpm and 120 rpm, it belongs to the resonance frequency of the motor, and it is normal for the sound to be loud. 2. Check that the pump head screws and plate rod are tightened.
7	Hardware/ Software	Communication does not work	First check the software: 1. Whether the mode is communication mode. 2. Reset the machine address. 3. Check if there are two machines on the bus using the same address. If the problem is not resolved, continue to check the hardware: 4. Check if the connection is correct 5. Check whether the external control power supply supplies power.
8	Hardware/ Software	External control does not work	First check the software: 1. Whether the mode is external control mode. If the problem is not resolved, continue to check the hardware: 2. Check if the connection is correct. 3. Check whether the external control power supply supplies power.

Table 4 Malfunction Solutions Reference Table



Note: This product is not medically certified. When used as a component in a medical device, the medical device itself must have medical certification.

Dimensions

Unit: mm

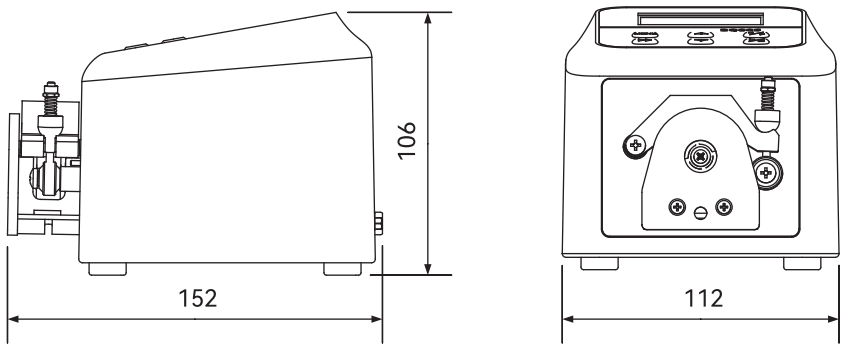


Figure 22 Dimensions of DW10-1

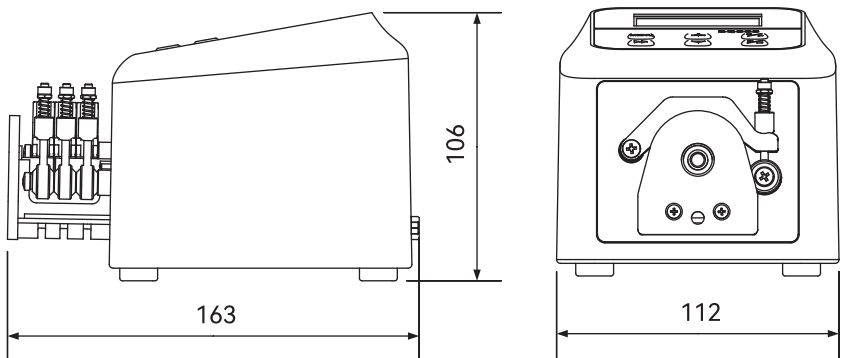


Figure 23 Dimensions of DW10-3

Ordering Information

Product Model	Description	Order Number
BQ80S		

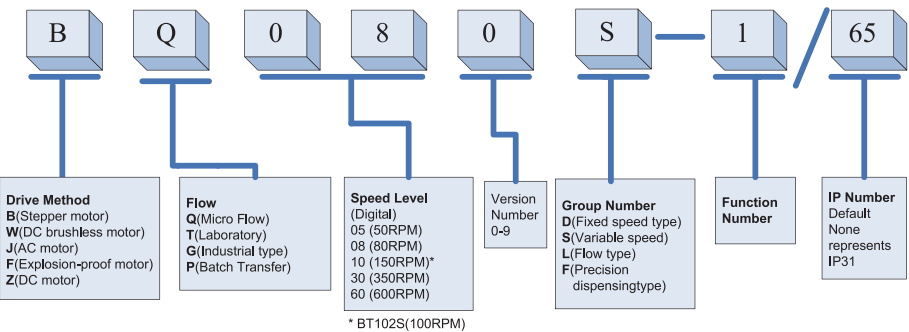
Table 5 Ordering Information

Optional Accessories Table

Accessories list	Description	Order Number
Foot switch		1060200100017

Table 6 Table of Optional Accessories

Naming Rules



Technical Parameters

BQ80S Technical Parameters

Functions

Suitable Pump Heads	DW10-1,DW10-3
Key Functions	Control speed, rotation direction, start and stop, full speed, working mode, state memory (power-off memory), dispensing operation and other parameters.
External Control Functions	Foot switch control, external control start/stop, external control forward and reverse rotating, 5-24V wide range input, photoelectric isolation, analog 0~5V/0~10V/4~20mA software setting switching.
Communication Functions	RS485, support Modbus communication protocol
Display Functions	Displays the current running speed, running direction, working mode and each parameter setting information.
Direction Control	Free adjustment of forward and reverse rotation direction.

Performance

Flow Range	0.0035-34 mL/min
Speed Range	0.1-80 rpm
Speed Resolution	0.1 rpm, accuracy error less than $\pm 0.5\%$
Dispensing Range	0.1~999 seconds/minutes/hours
Adjustment Method	Mask key operation
Display Method	128*64 LCD
Applicable Power Supply	AC 100-240V 50Hz/ 60Hz Power Input DC 24V
Wattage	<10W
Working Environment	Temperature 0~ 40°C, Relative humidity<80%
Dimensions	152*112*106 (BQ80SV2 drive installed DW10-1 pump head) 163*112*106 (BQ80SV2 drive installed DW10-3 pump head)
Driver Weight	1kg
Degree of Protection	IP31
Degree of Pollution	2

◆Flow Rate Chart of the Pump

Driver Model	Suitable Pump Head	Channel Number	Suitable Tube (mm)	Single-Channel Flow Rate(mL/min)
BQ80S	DW10-1	1	Wall thickness 0.8~1, ID ≤ 3.17	0.0035~34
	DW10-3	3		0.0035~34



Note: The above applicable pump head, the number of suitable channels and the flow rate of a single channel are all obtained from the test of purified water with a Enterprise tube under normal temperature and pressure conditions in the laboratory. This data is for reference only, due to pressure in actual use, temperature, medium characteristics, tube material and other specific factors, the specific situation needs to consult our engineers.

◆ External Control Input and Output Performance

Input Switch Value or OC Gate Specification			
Project	Parameter		
Input Interface Principle			
Signal Input Method	switch (connect, disconnect) or NPN transistor OC gate		
Isolation Method	Optoelectronic isolation		
Input Analog Specifications			
Project	Parameter		
Interface Principle			
Input Impedance (<100HZ)	0-5V(0-10V)voltage input	R1=2.1KΩ	R2=1KΩ
	4-20mAcurrent	R1=91Ω	R2=160Ω
Allowable Error	0-5V、0-10V、 4-20mA	±1%	
Resolution	0-5V(0-10V)	2.5mV	
	4-20mA	4uA	
Internal Output Power Specifications			
Project	Parameter		
The Output Voltage	DC12V±1V		
Allowable Output Current	< 130mA		
External Input Power Specification			
Project	Parameter		
Allowable Input Voltage	DC5-25V		
Allowable Input Current	>350mA		