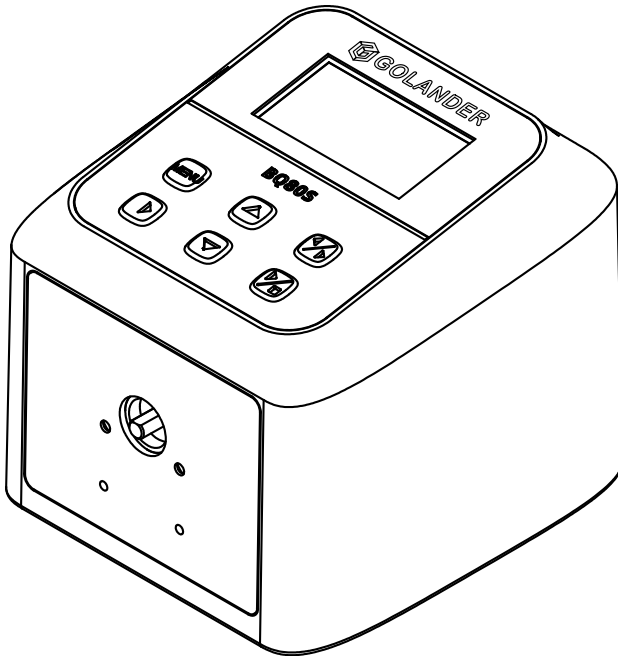




BQ80S V2

Variable-Speed Peristaltic Pump

Operating Manual



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Safety Precautions



Danger

- Use the correct voltage indicated on the rating plate label of the pump to avoid any damage.
- Do not make any unauthorized dismantling, changes, or modifications to the pump which could result in malfunctions or even potential accidents.
- Turn off the pump drive before installing or removing tubing, attempting any maintenance, cleaning, or repair of the drive, connecting or disconnecting external control devices or a communication interface. Fingers or loose clothing could get caught in the drive mechanism.



Warning

- Ensure no chemical reactions occur between the handled fluid with the material of the pump head and tubing before use.
- Tubing should be checked regularly to avoid breakage. Tubing breakage may result in fluid being sprayed from the pump. Use appropriate measures to protect the operator and equipment. The operator is solely liable for damages resulting from tubing breakage, particularly the leakage of toxic or valuable liquids.
- The pump is provided with a grounded plug which must be well grounded at all times.
- This device is not designed for nor intended for usage in patient-connected applications, including but not limited to medical and dental use.
- Observe all other applicable regulations concerning working safety, operational safety, environmental protection, and relevant local regulations.

(DE) SICHERHEITSHINWEISE



Gefahr

- Verwenden Sie die richtige Spannung, die auf dem Typenschild der Pumpe angegeben ist, um Schäden zu vermeiden.
- Nehmen Sie keine unbefugten Demontagen, Änderungen oder Modifikationen an der Pumpe vor, die zu Fehlfunktionen oder sogar zu Unfällen führen könnten.
- Schalten Sie den Pumpenantrieb aus, bevor Sie Schläuche ein- oder ausbauen, Wartungs-, Reinigungs- oder Reparaturarbeiten am Antrieb vornehmen oder externe Steuergeräte oder eine Kommunikationsschnittstelle anschließen oder trennen. Finger oder lose Kleidungsstücke können sich im Antriebsmechanismus verfangen.



Warnung

- Vergewissern Sie sich vor der Verwendung, dass keine chemischen Reaktionen zwischen dem Fördermedium und dem Material des Pumpenkopfs und der Schläuche auftreten können.
- Die Schläuche sollten regelmäßig überprüft werden, um Brüche zu vermeiden. Ein Schlauchbruch kann dazu führen, dass Flüssigkeit aus der Pumpe spritzt. Ergreifen Sie geeignete Maßnahmen zum Schutz des Bedieners und der Ausrüstung. Der Betreiber haftet allein für Schäden, die durch einen Schlauchbruch entstehen, insbesondere für das Austreten von giftigen oder wertvollen Flüssigkeiten.
- Die Pumpe ist mit einem geerdeten Stecker ausgestattet, der stets korrekt an eine abgesicherte Netzsteckdose angeschlossen sein muss. Dieses Gerät ist nicht für Anwendungen ausgelegt oder vorgesehen, die im Zusammenhang mit der Behandlung von Patienten stehen. Medizinische bzw. zahnmedizinische Anwendungen sind nicht bestimmungsgemäß.
- Beachten Sie alle anderen geltenden Vorschriften zur Arbeitssicherheit, zur Betriebssicherheit, zum Umweltschutz sowie die einschlägigen örtlichen Vorschriften.

(FR) CONSIGNES DE SÉCURITÉ



Danger

- Utilisez la tension correcte indiquée sur la plaque signalétique de la pompe afin d'éviter tout dommage.
- Ne procédez pas à des démontages, changements ou modifications non autorisés de la pompe qui pourraient entraîner des dysfonctionnements, voire des accidents.
- Mettez l'entraînement de la pompe hors tension avant d'installer ou de retirer des tuyaux, d'effectuer des travaux d'entretien, de nettoyage ou de réparation sur l'entraînement ou de connecter ou déconnecter des dispositifs de commande externes ou une interface de communication. Des doigts ou des vêtements lâches pourraient se prendre dans le mécanisme d'entraînement.



Avertissement

- Avant toute utilisation, assurez-vous qu'il n'y a pas de réaction chimique entre le liquide pompé et le matériau de la tête de pompe et des tubes.
- Les tuyaux doivent être contrôlés régulièrement pour éviter les ruptures. Une rupture de tuyau peut entraîner des projections de liquide hors de la pompe. Prenez les mesures appropriées pour protéger l'opérateur et l'équipement. L'opérateur est seul responsable des dommages causés par une rupture de tuyau, notamment en cas de fuite de liquides toxiques ou précieux.
- La pompe est équipée d'une fiche de mise à la terre qui doit toujours être bien reliée à la terre.
- Cet appareil n'est pas conçu ni prévu pour être utilisé en présence de patients, y compris, mais sans s'y limiter, dans le cadre d'applications médicales et dentaires.
- Respectez toutes les autres réglementations applicables en matière de sécurité du travail, de sécurité d'exploitation, de protection de l'environnement.

(ES) INSTRUCCIONES DE SEGURIDAD



Peligro

- Utilice la tensión correcta indicada en la placa de características de la bomba para evitar daños.
- No realice ningún desmontaje, cambio o modificación no autorizada en la bomba que pueda provocar un mal funcionamiento o incluso accidentes.
- Desconecte el accionamiento de la bomba antes de instalar o retirar las mangueras, realizar trabajos de mantenimiento, limpieza o reparación en el accionamiento o conectar o desconectar dispositivos de control externos o una interfaz de comunicación. Los dedos o la ropa suelta podrían quedar atrapados en el mecanismo de accionamiento.



Advertencia

- Antes de usarla, asegúrese de que no hay reacciones químicas entre el medio bombeado y el material de la cabeza de la bomba y las mangueras.
- Las mangueras deben ser revisadas regularmente para evitar roturas. La rotura de una manguera puede hacer que salga líquido de la bomba. Tome las medidas adecuadas para proteger al operador y al equipo. El operador es el único responsable de los daños causados por la rotura de una manguera, especialmente por la fuga de líquidos tóxicos o valiosos.
- La bomba está equipada con un enchufe con toma de tierra que debe estar siempre bien conectado a tierra.
- Este aparato no está diseñado ni pensado para su uso en relación con los pacientes, incluyendo pero sin limitarse a las aplicaciones médicas y dentales.
- Respetar todas las demás normas aplicables en materia de seguridad laboral, seguridad operativa y protección del medio ambiente.

(IT) ISTRUZIONI DI SICUREZZA



Pericolo

- Usare la tensione corretta indicata sull'etichetta della targhetta della pompa per evitare qualsiasi danno.
- Non eseguire smontaggi, cambiamenti o modifiche non autorizzati alla pompa che potrebbero causare malfunzionamenti o addirittura potenziali incidenti.
- Spegnerne l'azionamento della pompa prima d'installare o rimuovere tubi, tentare qualsiasi manutenzione, pulizia o riparazione dell'azionamento, collegare o scollegare dispositivi di controllo esterni o un'interfaccia di comunicazione. Dita o indumenti larghi potrebbero rimanere impigliati nel meccanismo di azionamento.



Attenzione

- Assicurarsi che non si verifichino reazioni chimiche tra il fluido trattato e il materiale della testa della pompa e dei tubi prima dell'uso.
- I tubi devono essere controllati regolarmente per evitare rotture. La rottura del tubo può provocare spruzzi di fluido dalla pompa. Utilizzare misure appropriate per proteggere l'operatore e l'attrezzatura. L'operatore è l'unico responsabile dei danni derivanti dalla rottura dei tubi, in particolare della fuoriuscita di liquidi tossici o preziosi.
- La pompa è dotata di una spina con messa a terra che deve essere sempre ben collegata a terra.
- Questo dispositivo non è progettato né destinato all'uso in applicazioni collegate al paziente, incluso ma non limitato all'uso medico e dentistico.
- Osservare tutte le altre norme applicabili riguardanti la sicurezza sul lavoro, la sicurezza operativa, la protezione dell'ambiente e le norme locali pertinenti.

1 Description

The BQ80S V2 variable-speed peristaltic pump provides not only basic functions such as start/stop, reversible direction, and adjustable speed but also the Time Dispense Mode and Anti-Drip function. With the MODBUS RS485 interface, the pump facilitates seamless communication with external devices such as PCs, HMIs, or PLCs.

BQ80S V2, flow rate 0.0035-34 mL/min, working speed 0.1-80 rpm.

2 Functions and Features

Peristaltic pumps excel in handling abrasive, corrosive, and viscous fluids without encountering issues like seal contact or valve clogging. Fluid contacts only the tubing or tube material. These pumps can achieve suction lift and prime up to 8m water column at sea level. They can effectively handle shear-sensitive fluids like latex or firefighting foam with minimal shearing. Moreover, peristaltic pumps can operate without liquid, making them suitable for pumping fluids with significant amounts of entrained air, such as black liquor soap. Their high volumetric efficiency makes them ideal for metering or dosing applications that require exceptional accuracy. Additionally, tubing and tube materials specifically designed for food and pharmaceutical applications are readily available.

- 128 x 32 dot matrix LCD for simple and intuitive parameter setting and status display.
- Membrane keypad for user-friendly interaction.
- Reversible direction, start/stop control, and adjustable speed.
- An external logic level signal can control start/stop, direction, and dispense functions; an external analog signal can adjust the rotating speed. The signal is optically isolated.
- External control signal supports wide voltage input from 5 to 24 V.
- External speed control signal type (voltage or current) can be switched via the control panel.

- The RS485 MODBUS interface allows easy communication with external devices.
- Circuit board features conformal coating for dust and moisture resistance.
- Anti-electromagnetic interference feature; wide input voltage range for complex power environment.
- ABS engineering plastic housing, streamlined design for durability

3 Components and Connectors

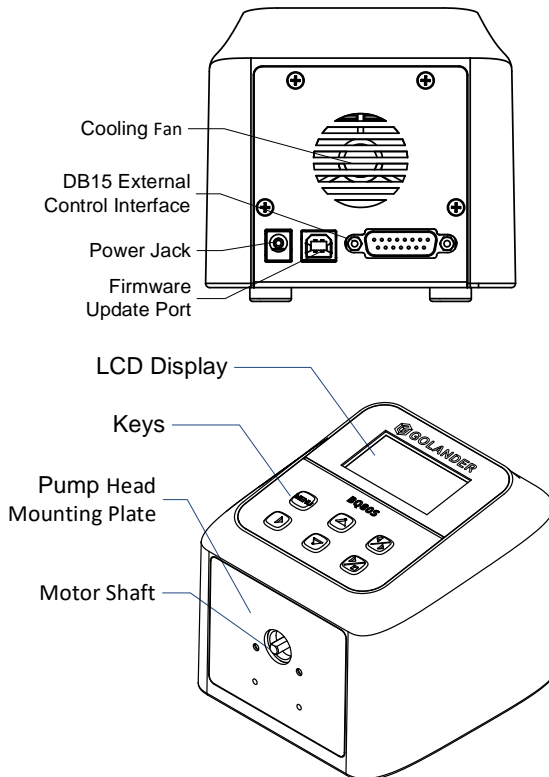


Figure 1. Components and Connectors

4 Display Panel and Operating Keypads

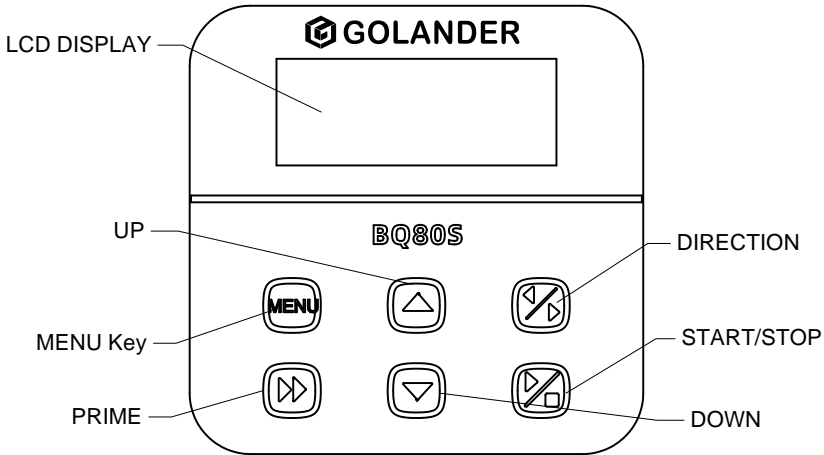


Figure 2. Display Panel

4.1 Keypad



UP Key. When pressed shortly, the last digit of the value will increase by 1. Hold the key to increase the value quickly.



DOWN Key. When pressed shortly, the last digit of the value will decrease by 1. Hold the key to decrease the value quickly.



MENU Key. When on the main screen, press the MENU key to enter the settings menu. When on the settings menu, press the MENU key to switch between the different menus. Press and hold it to return to the main screen. When the drive is running, this key is disabled.



PRIME key. Press the key to run the pump at the maximum allowed speed in the direction shown on the display. Press again to return to the previous state.



DIRECTION Key. Press to key to change the drive rotating direction, clockwise or counterclockwise.



START/STOP key. Press to start or stop the drive.

4.2 LCD Screen Display

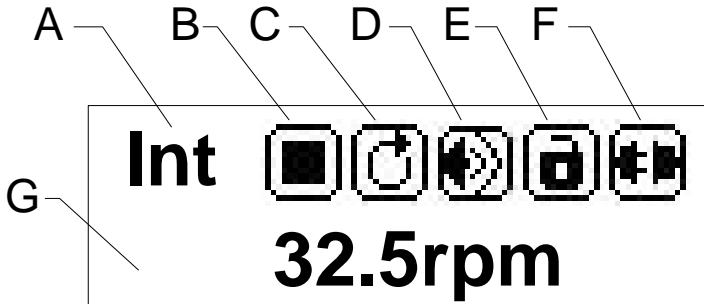


Figure 3. Display screen

A. Control Mode

The current control mode is displayed on the screen. Press the MENU key to access the "Run Mode" display. Press the START/STOP key to enter the setting of the control mode. Then, use the UP/DOWN key to choose from the 5 available control modes:

- Int (Internal Control Mode): Use the keypad to operate the pump. Use an optional external pulse signal to control the start and stop. See section 8.4 for details.
- ExtV/ExtI (External Control Mode): Use an external analog signal to control rotation speed. Use an external logic level signal to control direction, start and stop. The keypad is disabled. See section 8.5 for details.
- Time (Time Dispense Mode): Dispense fluid automatically by setting the duration for each dose, the time between doses, and the number of cycles. See section 8.6 for details.
- Level 1 (Logic Level 1 Control Mode - footswitch): Use an external logic-level signal to control the start and stop. Use the keypad to control direction and speed. See section 8.7 for details.
- Level 2 (Logic Level 2 Control Mode- footswitch and direction switch): Use an external logic level signal to control start, stop, and direction. Use the keypad to adjust the speed. See section 8.8 for details.

B. Running State



Stop



Running



Pause

C. Direction



Clockwise



Counterclockwise

D. Key Tone



Tone on



Tone off

E. Keypad Lock State



Keypad unlocked



Keypad locked

When the keypad is locked, only the START/STOP key will work. On the main screen, press and hold the DIRECTION key then release to lock the keypad; press and hold the DIRECTION key then release to unlock the keypad.

F. Communication State

It shows the current RS485 communication state.



Communication
disconnected

#1

Connected, pump
number is set to 1

G. Rotating Speed State

It shows the current rotating speed in revolutions per minute (rpm). When pressing the “PRIME” key, the drive runs at full speed, and the display will show “FULL”.

5 Parameter Settings

On the main screen, follow the steps below to adjust the parameters:

- 1) Press the MENU key to access the settings menu.
- 2) Press the UP or DOWN key to choose the parameter to adjust.
- 3) Press the START/STOP key to show the value of the parameter.
- 4) Use the UP or DOWN key to adjust the value.
- 5) Press the START/STOP key to confirm and back to the settings menu screen.
- 6) To return to the main screen, press and hold the MENU key or press the MENU key a few times until it goes back to the main screen.

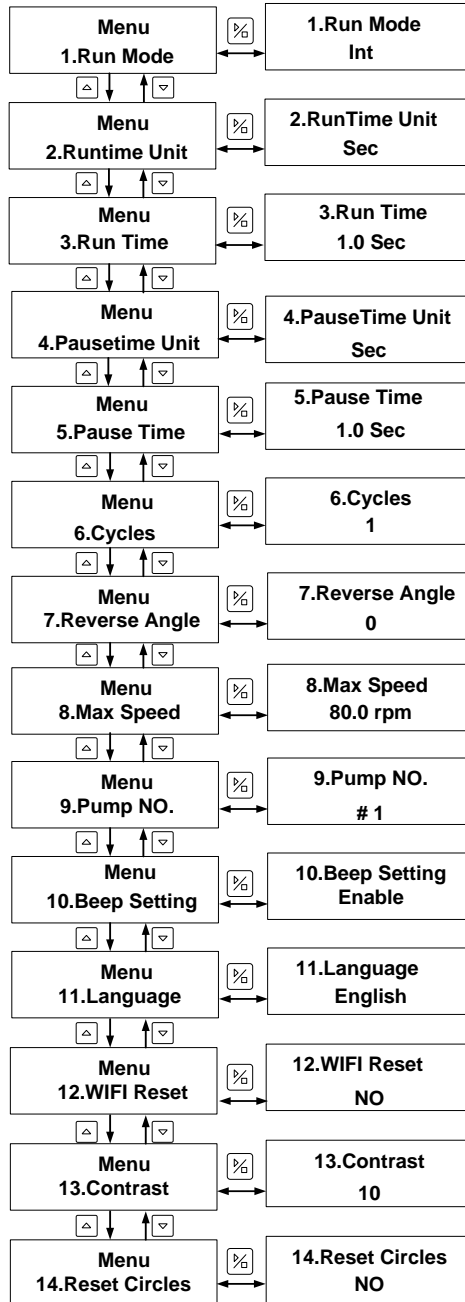


Figure 4. Parameter Setting Flow Chart

1. Run Mode: To choose from the available control modes: Internal Control Mode, External Control Mode, Time Dispense Mode, Logic Level 1 Control Mode, or Logic Level 2 Control Mode.
2. Run Time Unit: Time unit for the dispense duration in Time Dispense Mode, configurable in seconds, minutes, hours, or days.
3. Run Time: Dispense duration for each dose in Time Dispense Mode, adjustable within the range of 0.1 to 999 seconds/minutes/hours/days.
4. Pause Time Unit: Time unit for the interval time in Time Dispense Mode, configurable in days, hours, minutes, or seconds.
5. Pause Time: Pause time between successive doses in Time Dispense mode, adjustable within the range of 0.1 to 999 seconds/minutes/hours/days.
6. Cycles: Number of cycles in Time Dispense Mode, ranging from 0 to 999 cycles. When set to 0, dispensing continues until manually stopped; when set to any other value, the pump stops after the specified number of cycles (Figure 12).
7. Reverse Angle: Adjust the angle (0 to 720 degrees) at which the drive reverses direction to minimize dripping after dispensing. Disabling the anti-drip function by setting it to 0.
8. Max Speed: Maximum speed for the External Control Mode. It is the maximum speed that the external analog signal can control.
9. Pump No: It is the pump communication address for the communication mode. A restart of the drive is required for this to take effect.
10. Beep Setting: Enable or disable the key tone.
11. Language: System language setting in English or Chinese.
12. WIFI Reset: Set the WIFI connection.
13. Contrast: LCD backlight contrast setting.
14. Reset Circles: Recount tubing life after a tubing is installed or replaced.

6 System Advanced Parameter Settings

In the main interface, press the MENU and UP keys simultaneously to access the advanced system parameter setting interface. In this interface, press the UP and DOWN keys for advanced parameter selection, press the

START/STOP key to enter the submenu, and press the UP or DOWN key to adjust the parameters. To return to the previous menu, press the START/STOP key. To return to the main interface, press the MENU key.

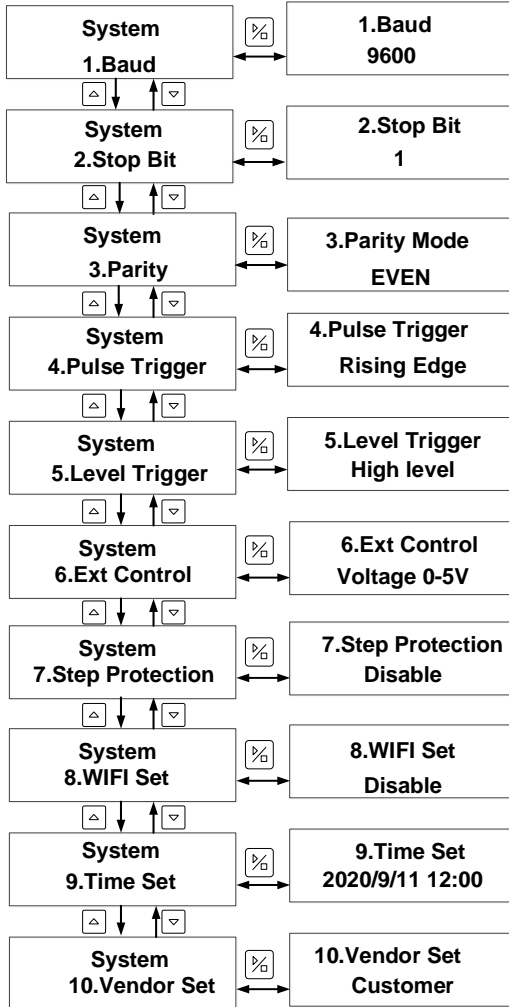
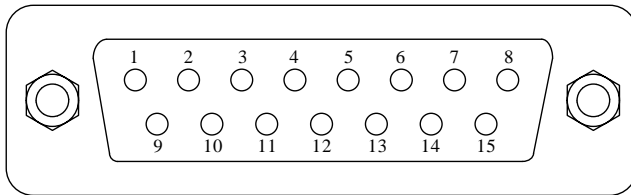


Figure 5 System advanced parameter setting flow chart

1. Baud Rate: In communication mode, set the baud to 4800, 9600, 19200, 38400 (default is 9600).
2. Stop Bit: In communication mode, choose between a stop bit size of 1 or 2 (default is 1).

3. **Parity Mode:** In communication mode, select the parity type: odd, even, or none (default is even parity).
4. **Pulse Trigger:** In Internal Control or Time Dispense mode, set the pulse trigger type of external control start/stop signal of the drive as rising edge or falling edge trigger (default is rising edge trigger).
5. **Level Trigger:** In External Control or Level mode, set the level trigger type as high-level or low-level trigger (default is the high-level trigger) when the drive is controlled externally.
6. **External Control:** In External Control Mode, choose an analog signal type to control the drive speed: voltage mode 0-5V, voltage mode 0-10V, and current mode 4-20mA (the driver speed will change linearly with the change of external control analog signal).
7. **Step Protection:** The setting of step protection is disabled by default.
8. **WIFI Setting:** The WIFI switch of the drive is disabled by default.
9. **Time Setting:** Set the current date and time. Press the PRIME key to change the set parameters, press the UP or DOWN key to adjust, and press the START/STOP key to save and exit.
10. **Vendor setting:** The default setting is “customer”.

7 External Control Interface



DB15	Mark	Note
1	ADC_W	Positive of external analog input
2	B	Communication interface, B pole of
3	A	Communication interface, A pole of
4	VCC_W	External voltage input terminal
5	-	-
6	CW_W	External input signal to control the

7	PWM	Pulse output
8	COM	Ground of external power
9	AGND	Negative of analogue signal input
10	+12V	Positive of internal +12V power
11	GND	Ground of Internal power source
12	CW	Internal direction signal output
13	RS_W	External start/stop signal input
14	-	-
15	-	-

8 Operating Instructions

8.1 Before Operation

- 1) Check the packing slip to ensure all parts are included and in good condition. Contact the manufacturer or distributor if there are any issues.
- 2) Read the instructions thoroughly.
- 3) Check the power supply voltage and ensure it matches the pump's requirements.
- 4) Make sure the pump head is properly installed and securely tightened.
- 5) Ensure the tubing is correctly installed and secured in the pump head before starting the pump. Inspect the tubing for any cracks or defects before operation.
- 6) Connect any required external devices, such as a footswitch or analog input signal, before powering on the pump.
- 7) Ensure the pump is placed on a stable surface to prevent it from moving during operation. Maintain a minimum clearance of 200mm behind the pump during operation.
- 8) Remove any obstacles or debris around the pump that may interfere with its operation.

8.2 Power Connection

The voltage of the power supply should match with what is indicated on the rating plate label of the pump. Please plug the 24V DC power into the connector on the rear of the pump.

8.3 Speed Setting

The speed resolution of the BQ80S V2 is 0.1 rpm. On the main screen, the speed can be set by pressing the UP or DOWN key.

- Pressing the UP or DOWN key shortly, the last digit of the value will change by 1.
- Hold the UP or DOWN key to quickly adjust the value.
- Hold the PRIME key and press the UP key to set the speed to the maximum directly.
- Hold the PRIME key and press the DOWN key to set the speed to the minimum directly (0.1 rpm).

8.4 Mode Change

Turn on the pump. The display will show a welcome message then the main screen. Press the MENU key, the screen will show “Run Mode”, press the START/STOP key to access working modes, and then use the UP or DOWN key to change the working mode (*Figure 6*).

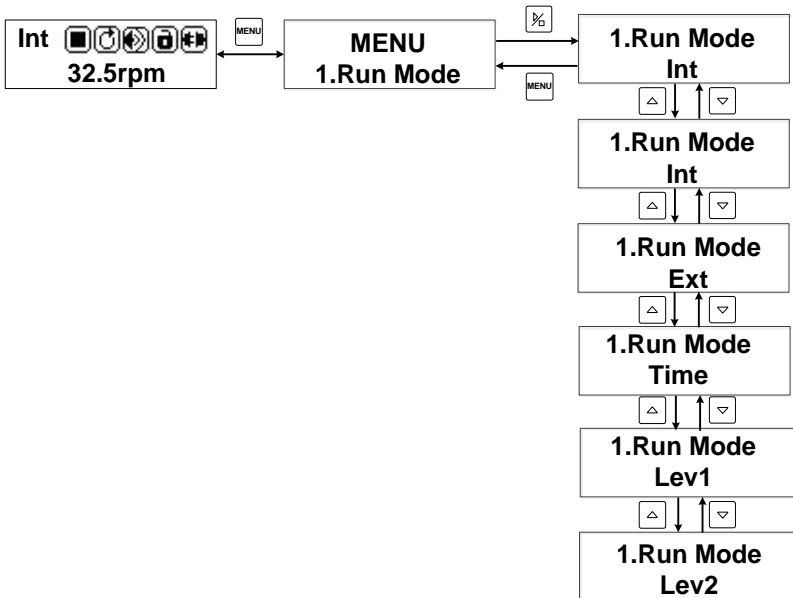


Figure 6. Change Working Mode

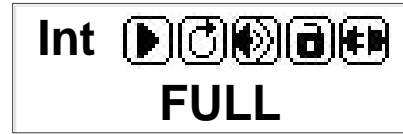
8.5 Internal Control Mode

Use the keypad to operate the pump. Use an optional external pulse signal to control the start/stop.

- 1) Turn on the pump. The pump will display the main screen.
- 2) Press the MENU key and select the Internal Control mode (Int shown on the display).
- 3) Press the UP or DOWN key to adjust the speed.
- 4) Press the DIRECTION key to change the rotating direction.
- 5) Press the START/STOP key to start or stop the pump.
- 6) Pressing the PRIME key will enable the pump to run at the maximum allowed speed.



Normal Speed



Priming

Figure 7. Normal vs Priming

8.6 External Control Mode

In this mode, an external logic level signal controls direction, start, and stop, while an external analog signal regulates rotation speed. The keypad functionality is disabled.



For External Voltage Signal
0-5V/0-10V



For External Current Signal
4-20mA

Figure 8. External Control Mode

To control the pump by an external signal:

- 1) Turn off the pump. Wire the DB15 connector as shown in [Figure 9](#) or

Figure 10. Connect it to the DB15 port on the rear of the pump.

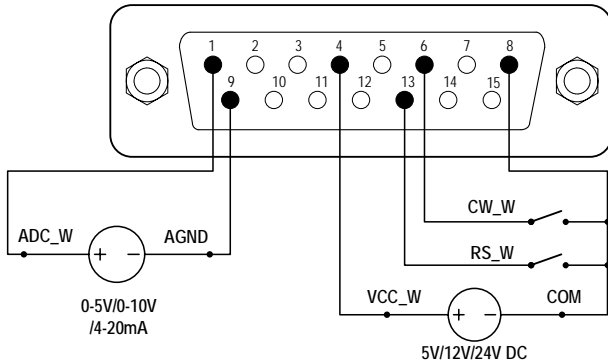


Figure 9. DB15 Wiring with External Power Source

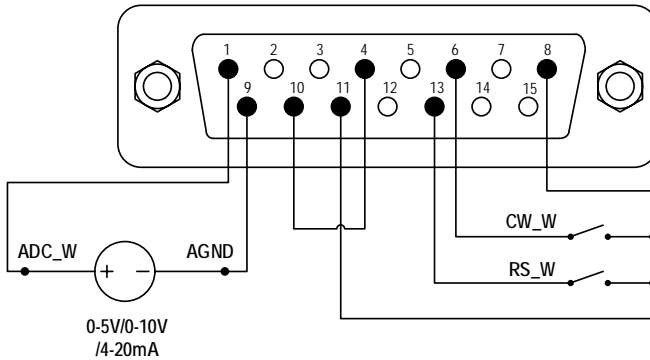


Figure 10. DB15 Wiring with the Internal 12VDC Power Source

- 2) Turn on the pump. The pump will display the main screen.
- 3) Press the MENU key to change the mode to External Control mode (“ExtV” or “ExtI” shown on the display).
- 4) Close the external RS_W switch, and turn on the external analog signal power source. The speed will change according to the intensity of the input signal. Open the RS_W switch to stop the drive.
- 5) Opening the CW_W switch, the pump will run clockwise. Closing the CW_W switch, the pump will run counterclockwise.

8.7 Time Dispense Mode

The pump will dispense fluid automatically by setting the duration for each dose,

the pause time between doses, and the number of cycles. When dispensing, the display will show the dispensing time or pause time (1.2s in Figure 11), and the total cycles that have been dispensed (4 in Figure 11).

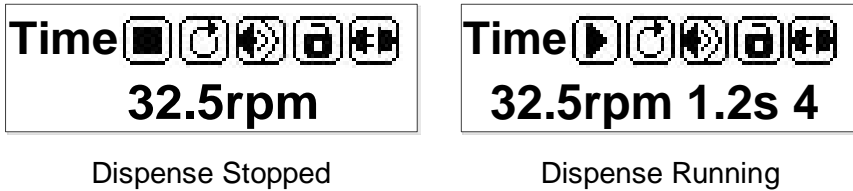


Figure 11. Time Dispense Mode

To set the Time Dispense Mode:

- 1) Turn on the pump. The pump will display the main screen.
- 2) Use the MENU key to change the mode to Time Dispense Mode (“Time” shown on the display).
- 3) Continue to set the duration for each dose, the pause time between doses, and the number of cycles.
- 4) Press the MENU key again to return to the main screen.

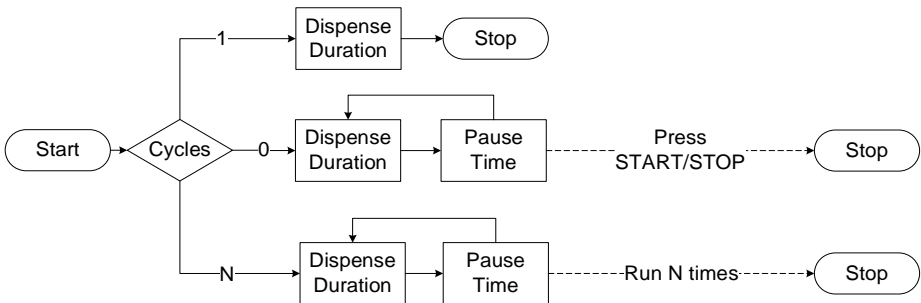


Figure 12. Dispense Cycle Setting

To execute Time Dispense:

- 1) Press the DIRECTION key to change the running direction, clockwise or counterclockwise.
- 2) Press the START/STOP key to start dispensing.
- 3) When the drive is running, press the START/STOP key to stop the drive

at any time.

- 4) A footswitch can be used to start/stop the pump.

8.8 Logic Level 1 Control Mode (footswitch)

Use an external logic-level signal to control the start and stop. Use the keypad to control direction and speed.



Figure 13. Logic Level 1 Control Mode

- 1) Turn off the pump. Wire the DB15 connector as shown in [Figure 14](#) or [Figure 15](#), and connect it to the DB15 port on the rear of the pump.

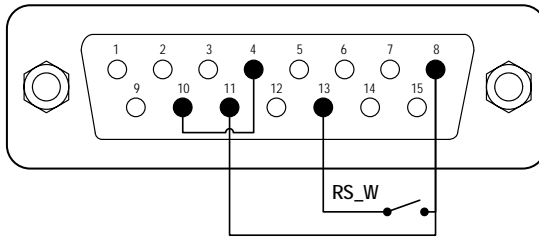


Figure 14. Logic Level 1 Control with Internal 12V Power Source

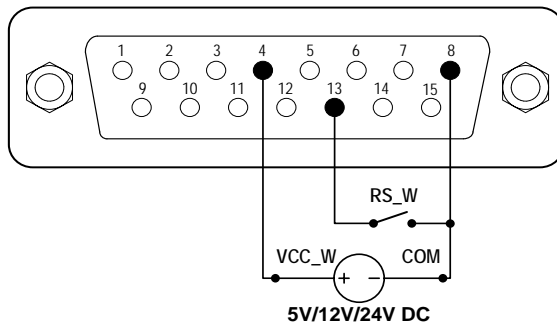


Figure 15. Logic Level 1 Control with External Power Source

- 2) Turn on the pump. The pump will display the main screen.
- 3) Use the MENU key to change the mode to Logic Level 1 control mode

(shows Lev1 on the screen).

- 4) Press the UP or DOWN key to adjust the speed.
- 5) Press the DIRECTION key to change the rotating direction.
- 6) When the switch is closed, the drive will run; when the switch is opened, the drive will stop.

8.9 Logic Level 2 Control Mode (footswitch and direction switch)

Use an external logic-level signal to control start, stop, and direction. Use the keypad to control speed.



Figure 16. Logic Level 2 Control Mode

- 1) Turn off the pump. Wire the DB15 connector as shown in [Figure 17](#) or [Figure 18](#), and connect it to the DB15 port on the rear of the pump.

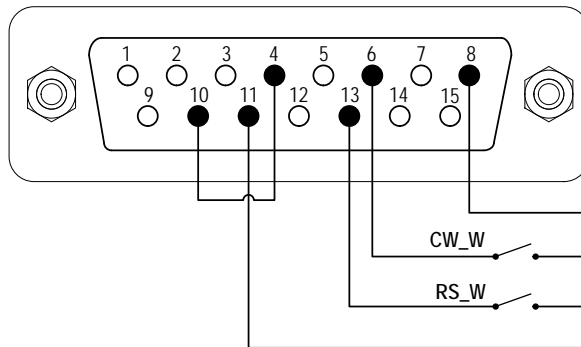


Figure 17. Logic Level 2 Control with Internal 12V Power Source

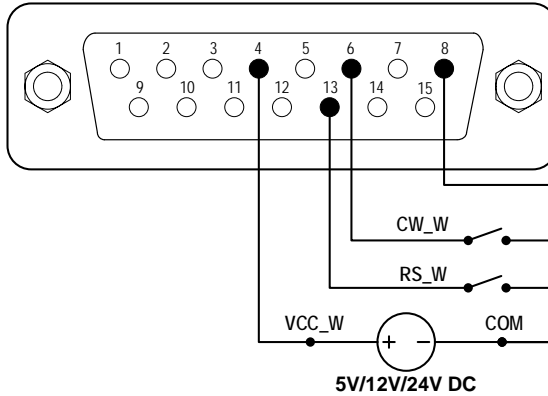


Figure 18. Logic Level 2 Control with External Power Source

- 2) Turn on the pump. The pump will display the main screen.
- 3) Use the MENU key to change the mode to Logic Level 2 control mode (shows Lev2 on the screen).
- 4) Press the UP or DOWN key to adjust the speed.
- 5) When the RS_W switch is closed, the drive will run at the set speed; when the RS_W switch is opened, the drive will stop.
- 6) When the CW_W switch is opened, the drive will run clockwise. When the CW_W switch is closed, the drive will run counterclockwise.

8.10 Communication Mode

The RS485 interface supports the standard MODBUS protocol. The pump can communicate with external devices via the communication port. Please refer to the [Communication Instruction manual](#) for the parameters and supported commands.



Communication Disconnected



Communication Connected
The pump number is set to 1.

Figure 19. Communication Mode

- 1) When the power is off, wire the DB15 connector as shown in Figure 20 or Figure 21, then connect it to the DB15 port on the rear of the pump. An external DC power source is recommended to avoid electrical interference.

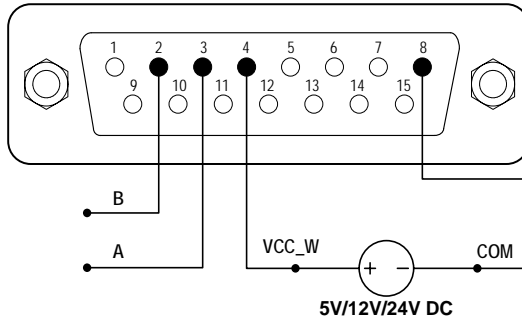


Figure 20. RS485 MODBUS Wiring with External Power Source

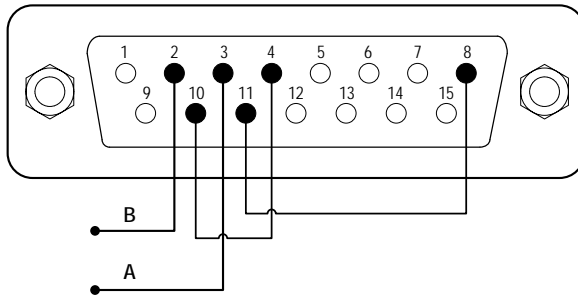


Figure 21. RS485 MODBUS Wiring with Internal 12V Power Source

- 2) Turn on the pump. The pump will display the main screen.
- 3) Use the MENU key to change the mode to Internal Control mode or Time Dispense mode.
- 4) Control pump with the communication interface.
- 5) Press the START/STOP key to stop the drive at any time.

9 Maintenance

9.1 Warranty

The pump drive comes with a three-year and the pump head one-year labor and parts warranty. The limited warranty does not cover any damage that is caused by improper usage and handling.

9.2 Regular Maintenance

- 1) Regularly check the tubing and connections to avoid leakage.
- 2) Do not cover the fan on the rear of the pump.
- 3) Do not use water to wash the pump. Keep the pump head dry.
- 4) Do not use chemical solvents to clean the pump and pump head.

9.3 Malfunction Solutions

No.	Mal-function	Description	Solution
1	Hardware	No display	<ol style="list-style-type: none"> 1. Check the power cord 2. Check the internal power cord connection inside the pump.
2	Hardware	Motor does not work	<ol style="list-style-type: none"> 1. Check the indicator of the driver board. 2. Check the wire connection between the motor and the driver board. 3. Check the wire connection between the driver and the mainboard. 4. Check the power voltage for the pump.
3	Hardware	Motor vibration	<ol style="list-style-type: none"> 1. Check the wire connection between the motor and the driver board. 2. The motor is overloaded. Check the mechanical connection.
4	Hardware	Motor only runs in one direction	Check the connection between the drive board and the main control board.
5	Hardware	The keypad	<ol style="list-style-type: none"> 1. Check the wire connection between

		does not work	the keypad and the mainboard. 2. Check if the key is broken.
6	Hardware	External control does not work	1. Check the wiring of the connector. 2. Check if the external control power voltage is provided. 3. Check the connections of the external control board.
7	Hardware	RS485 com does not work	1. Check the wiring of the connector. 2. Check if the external control power voltage is provided. 3. Check the connections of the communication board.
8	Hardware	Noisy when running	Check the screws and level on the pump head to make sure they are secure.
9	Software	External control does not work	Check if the pump is on External Control Mode.
10	Software	RS485 does not work properly	1. Check if the display shows that the communication is ready. 2. Reset the address of the pump. 3. Check whether on the bus there are two pumps using the same address



If a problem persists, please contact the manufacturer or distributor.

10 Dimensions

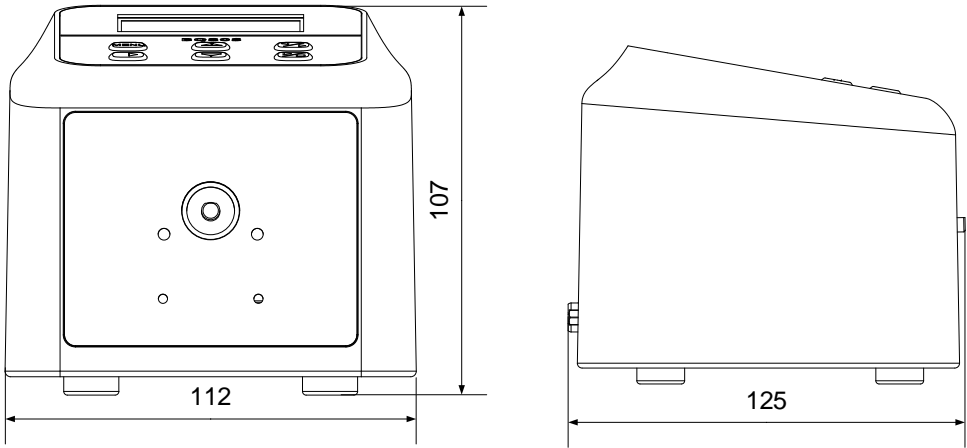
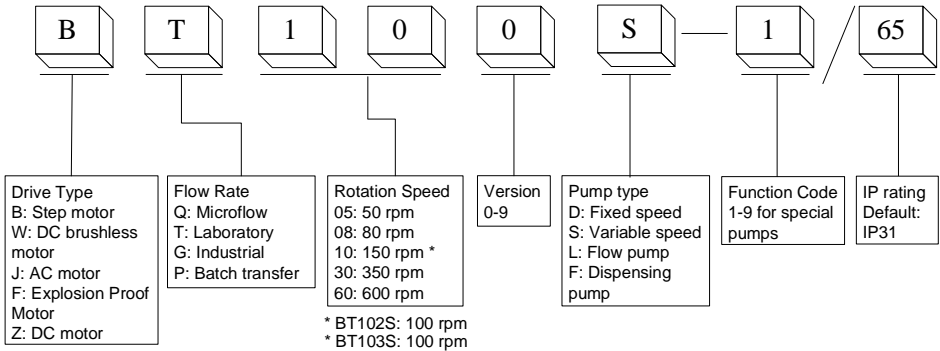


Figure 22. Dimensions (mm)

11 Naming Rule



12 Specifications

Suitable pump heads	DW10
Speed	0.1-80 rpm, 0.1 rpm resolution
Flow rate	0.0035-34 mL/min
Speed accuracy	±0.2%
Time range	0.1-999 sec/min/hour
Power supply	24V DC
Power consumption	10W
External logic level control signal	5V, 12V, 24V
External analog control signal	0-5V, 0-10V, 4-20mA
Communication interface	RS485 MODBUS
Operating condition	Temperature 5-40°C Relative humidity <80%
IP grade	IP31
Display	128x64 LCD
Dimensions (LxWxH)	125x112x107mm(4.9x4.4x4.2inch)
Weight	1 kg (2.2 lbs)

BQ80S Suitable Pump Heads, Tubing, and Flow Parameters

Pump Head	No. of Channels	Tubing size (mm)	Flow rate per channel (mL/min)
DW10-1	1	Wall Thickness 0.8-1, ID≤3.17	0.0035-34
DW10-3	3	Wall Thickness 0.8-1, ID≤3.17	0.0035-34

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