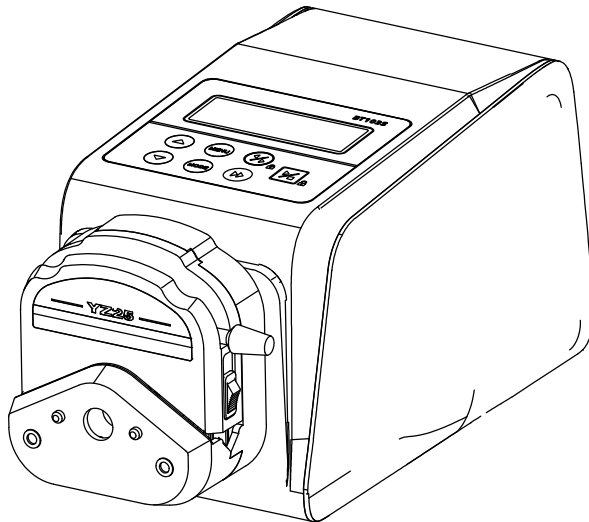




BT103S Variable-Speed Pump Operating Manual



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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, and 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 BT103S variable-speed peristaltic pump offers not only basic functions such as start/stop, speed control, prime and reversible direction, but also includes an LCD display, time dispense mode, and anti-drip function. It can be easily controlled via RS485 communication using the MODBUS protocol.

BT103S flow range 0.0001-480 mL/min, speed 0.1-100 rpm.

2 Functions and Features

Peristaltic pumps provide many advantages, including the ability to handle extremely viscous fluids, abrasive slurries, and corrosive fluids. The absence of seals in contact with the medium pumped and no valves to clog makes it a reliable pump. The smooth and easy-to-clean inner surfaces ensure that fluid contacts only the tubing or tube material. The pump has a suction lift and priming capability of up to 8m water column at sea level, making it suitable for a variety of applications. Additionally, it can handle shear-sensitive fluids like latex or firefighting foam with low shearing and can run dry while pumping fluids with high quantities of entrained air, such as black liquor soap. The high volumetric efficiency of the pump enables it to operate in metering or dosing applications where high accuracy is required. Furthermore, tubing and tube materials are available for food and pharmaceutical use, making the pump a versatile option for various industries.

- LCD displays speed and working mode
- Keypad for operation
- Time dispense mode for customized dispensing
- High-precision speed control
- Optional external analog signal control for speed, logic level signal for start-stop and direction, with optically isolated control signals

- RS485 communication supports MODBUS protocols for easy connectivity
- Wi-Fi communication is available, except for the US/European market
- Circuit boards feature conformal coating for dust and moisture protection
- Ultra-strong anti-electromagnetic interference and wide voltage design for complex power supply environments
- Plastic housing is easy to clean and resistant to corrosion

3 Components and Connectors

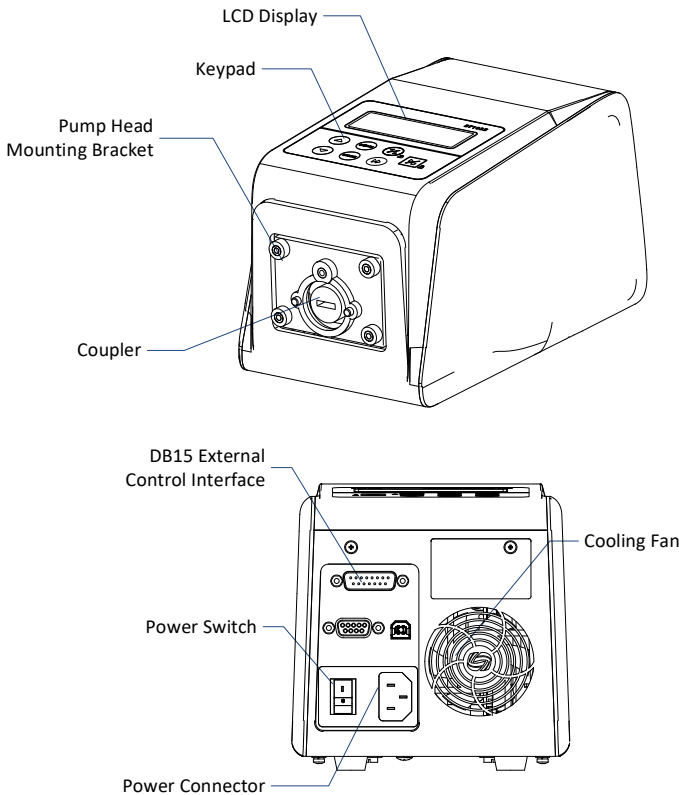


Figure 1. Components and Connectors

4 Display Panel and Operating Keypad

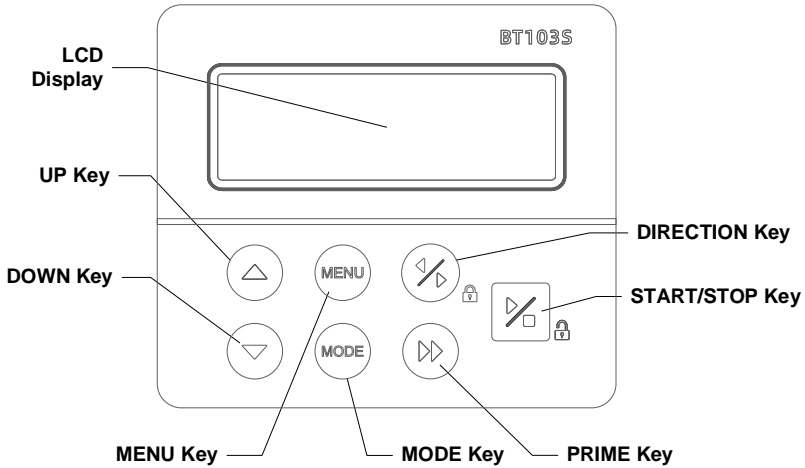





Figure 2. Display Panel

4.1 Keypad

 **UP Key.** Pressing this key briefly will increase the last digit of the displayed value by 1. Holding the key down will increase the value rapidly.

 **DOWN Key.** Pressing this key briefly will decrease the last digit of the displayed value by 1. Holding the key down will decrease the value rapidly.

 **MENU Key.** Pressing this key when on the main screen will enter the setting menu. When in the setting menu, pressing this key will return to the main screen. This key is disabled when the drive is running.



MODE key. When the drive is not running, this key can be used to change the working mode, including Internal Control mode, External Control mode, Time Dispense mode, Logic Level 1 control mode, or Logic Level 2 Control mode.



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



DIRECTION Key. Pressing this key will change the direction of the drive rotation, either clockwise or counterclockwise.



START/STOP key. This key controls the start and stop of the motor. When in the setting menu, pressing this key will enter the submenu.

4.2 LCD Screen Display

Data entry: When the drive is not running, press the number to input the desired value in the pop-up window. See the picture below.

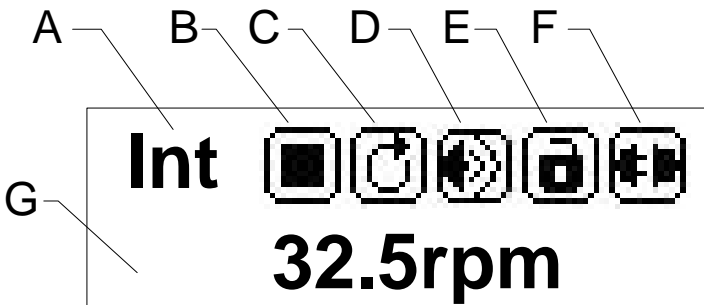


Figure 3. Display screen

4.2.1 A. Control Mode

The LCD display shows the current control mode. Press the MODE key

to switch between the following control modes:

- **Internal Control Mode**: Operate the pump using the keypad. Use an optional external logic signal to control start and stop.
- **External Control Mode**: Control rotation speed using an external analog signal. Use an external logic signal to control direction, start and stop. The keypad is disabled.
- **Time Dispense Mode**: Automatically dispense fluid by setting the duration for each dose, the time between doses, and the number of cycles.
- **Logic Level 1 Control Mode (footswitch)**: Use an external logic signal to control start and stop. Use the keypad to control direction and speed.
- **Logic Level 2 Control Mode (footswitch and direction switch)**: Use an external logic signal to control start, stop, and direction. Use the keypad to adjust the speed.

4.2.2 . Running State



Figure 4. Running State

4.2.3 C. Direction State



Figure 5. Direction

4.2.4 D. Wi-Fi Signal Strength

When Wi-Fi is disabled in the advanced parameter settings of the system, it shows the state of the keypad tone, on or off.



5 Parameter Settings

To access the setting menu from the main screen, press the **MENU** key. Use the **UP** or **DOWN** key to select the parameter you wish to adjust. Press the **START/STOP** key to display the current value of the parameter. Use the **UP** or **DOWN** key to adjust the value, then press the **START/STOP** key again to confirm the change and return to the main screen.



Figure 9. Parameter Setting Flow Chart

1. Run Time Unit: The time unit used for the dispense duration of Time Dispense mode, which can be in days, hours, minutes, or seconds.
2. Disp Time: The dispensing time for Time Dispense mode, which is the duration for each dose. The range is 0.1-999 seconds/minutes/hours/days.
3. Pause Time Unit: The time unit used for the interval time of Time Dispense mode, which can be in days, hours, minutes, or seconds.
4. Pause time for dispense mode: The interval time between doses when the number of cycles set is more than 1. The range is 0.1-999 seconds/minutes/hours/days.
5. Cycle: The number of cycles for Time Dispense mode. The range is 0-999 cycles. If it is set to 0, the dispensing process will keep running until START/STOP is pressed, otherwise, the pump will stop when it finishes dispensing the set number of cycles (Figure 18).
6. Reverse Angle: The reverse angle range is 0-720 degrees. To minimize the drip after a dispense, the drive can reverse direction to draw the fluid back at the end of the tubing. When it is set to 0, the anti-drip function is disabled.
7. Max Speed: The maximum speed for External Control mode, which is the maximum speed that the external analog signal can control.
8. Pump No: The pump communication address for communication mode. Please restart the pump after changing the number to apply the setting.
9. Beep Setting: Set the key tone on or off.
10. Language: The system language setting, which can be English or Chinese.
11. WIFI Reset: Reset WIFI to link the drive to APP.
12. Contrast: LCD backlight contrast setting.
13. Reset Circles: After replacing the tubing, the tubing life needs to be reset, and the tubing life will be recalculated.

6 System Advanced Parameter Settings

In the main interface, press the **MENU** and **UP** keys to enter the 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 parameters. To return to the previous menu, press the **START/STOP** key. To return to the main interface, press the **MENU** key.

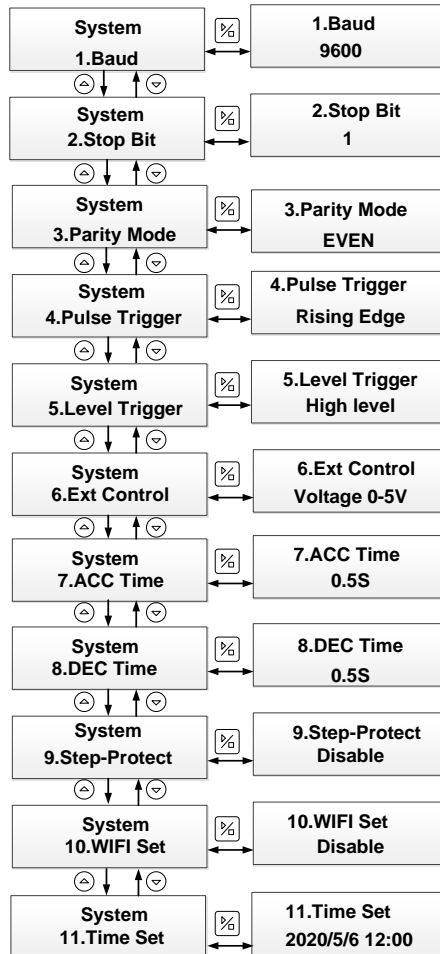
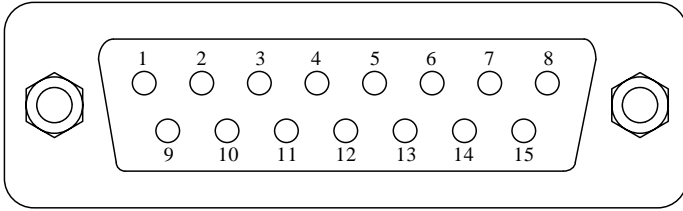


Figure 10 System advanced parameter setting flow chart

1. Baud: In communication mode, the baud rate can be set to 4800, 9600, 19200, or 38400 (the default is 9600).
2. Stop Bit: In communication mode, the size of the stop bit can be set to 1 or 2 (default is 1).
3. Parity Mode: In communication mode, the parity type can be set as odd, even, or none (default is even).
4. Pulse Trigger: In Internal Control or Time Dispense mode, the pulse trigger type of the external control start/stop signal of the driver can be set as rising edge or falling edge (default is rising edge).
5. Level trigger mode: In External Control or Level mode, the level trigger type when the driver is controlled externally can be set as high-level or low-level (default is high-level).
6. External Control mode: In External Control mode, the parameter type of the analog signal to control the drive speed can be set to voltage mode 0-5V, voltage mode 0-10V, or current mode 4-20mA (driver speed changes linearly with the change of external control analog signal).
7. Acceleration time: Set the acceleration time when the driver starts and runs. The unit is seconds (default is 0.5 seconds).
8. Deceleration time: Set the deceleration time when the driver stops running. The unit is seconds (default is 0.5 seconds).
9. Step-Protect: The step protection setting is off by default (the WIFI version has this function).
10. WIFI setting: The WIFI is off by default (the WIFI version has this function).
11. 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 the time, and press the START/STOP key to save and exit.

7 External Control Interface



DB15	Mark	Note
1	ADC_W	Positive of external analog input
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	PWM	Pulse output
8	COM	Ground of external power
9	AGND	Negative analog signal input
10	+12V	Positive of internal +12V power source
11	GND	Ground of Internal power source
12	CW	Internal direction signal output
13	RS_W	External start/stop signal input terminal
14	PWM_W	External pulse signal input
15	RS	Internal start/stop signal output

8 Operation Instructions

8.1 Before Operating

- 1) Please inspect the contents of the package and verify that nothing is damaged or missing. If there is an issue, please contact the manufacturer or distributor for assistance.
- 2) Read and familiarize yourself with the instructions provided.
- 3) Ensure that there is at least 200mm of space behind the pump

during operation.

8.2 Power Connection

Check the voltage requirement on the sticker of the pump and use a compatible power supply. Connect the power cord to the IEC Power Connector located at the back of the pump and plug the other end into an electrical outlet. Flip the power switch at the back of the pump to turn it on.

8.3 Change Control Mode

Turn on the power switch and the display will show a welcome message followed by the main screen. Press the **MODE** key to switch to a different working mode (*Figure 11*).

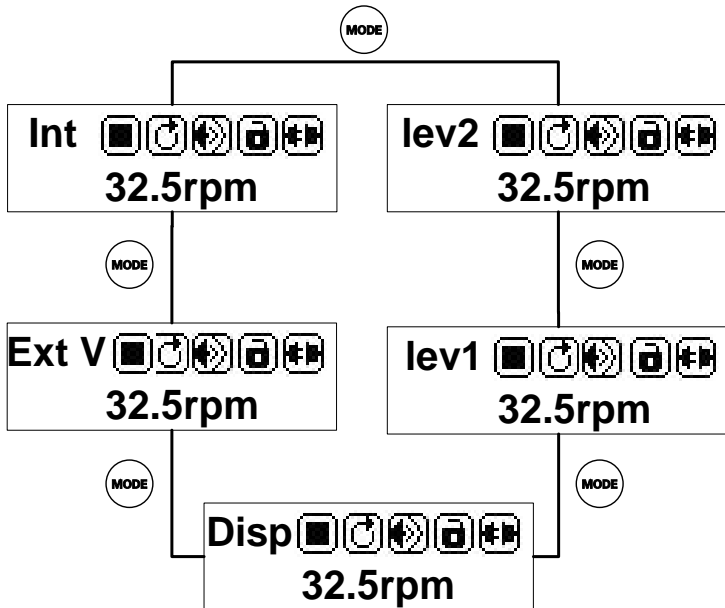


Figure 11. Change Working Mode

8.4 Internal Control Mode

To operate the pump in Internal Control mode, follow these steps:

- 1) Turn on the power switch. The pump will display the main screen.

- 2) Press the **MODE** key to change the mode to Internal Control mode (Int shown on the screen).
- 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) Press the **PRIME** key to run the pump at the maximum allowed speed.

In addition to using the keypad to operate the pump, you can also use an optional external pulse signal to control the start and stop functions.

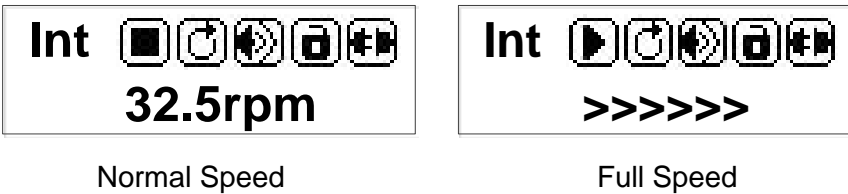


Figure 12. Normal vs Full Speed

8.5 External Control Mode

In this mode, the keypad is disabled, and external logic level signals are used to control the direction, start, and stop of the pump. Additionally, an external analog signal is used to control the rotation speed.

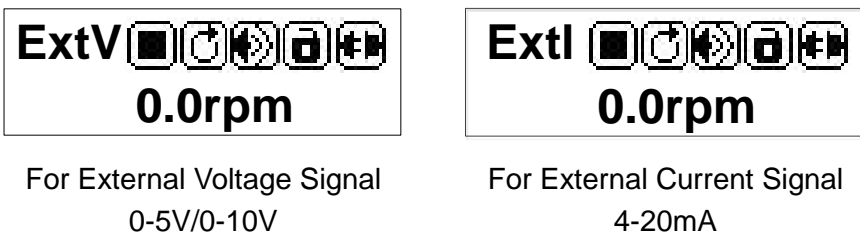


Figure 13. External Control Mode

To control the pump using an external signal, please follow these steps:

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

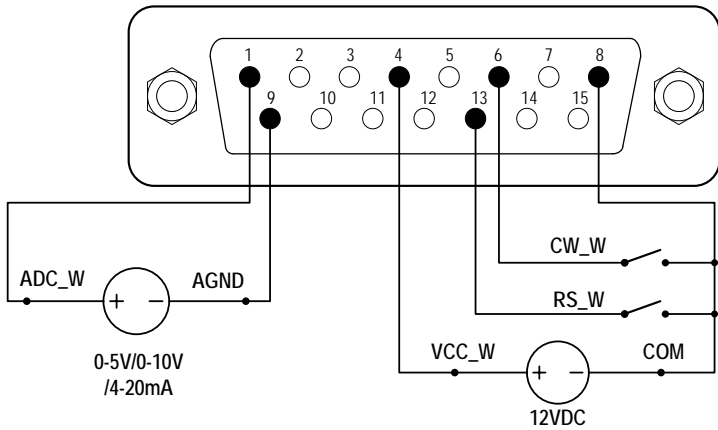


Figure 14. DB15 Wiring with External 12VDC Power Source

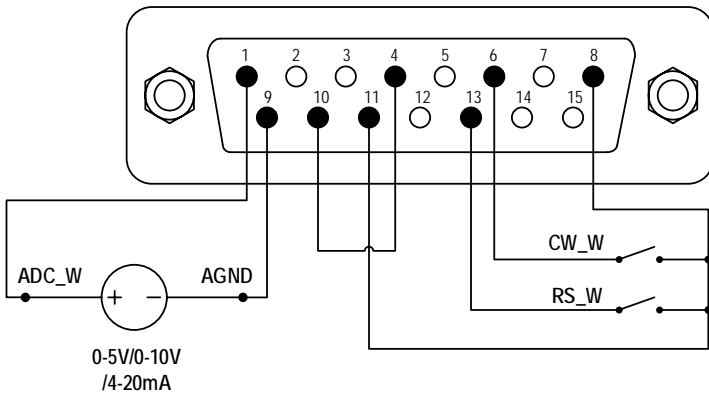


Figure 15. DB15 Wiring with Internal 12VDC Power Source

- 2) Turn on the power switch. The pump will display the main screen.
- 3) Press the **MODE** key to change the mode to External Control mode (ExtV or ExtI shown on the screen).
- 4) Close the external RS_W switch and turn on the external analog signal power source. The pump's speed will change according to the intensity of the input signal. Open the RS_W to stop the drive.
- 5) Open the CW_W switch to run the pump in a clockwise direction, or close the CW_W switch to run the pump in a counterclockwise

direction.

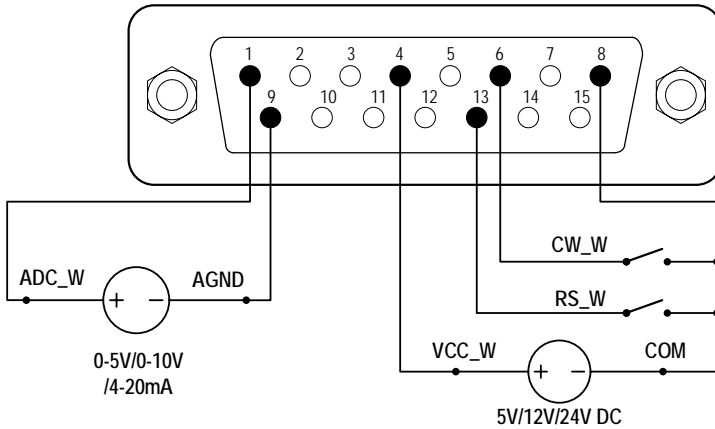


Figure 16. DB15 Wiring with External 24VDC Power Source

8.6 Time Dispense Mode

The pump can automatically dispense fluid by setting the duration for each dose, the pause time between doses, and the number of cycles. During dispensing, the display will show the dispensing time or lag time that has passed (as shown as "1.2s" in the figure below), as well as the total number of cycles that have been dispensed (shown as "4" in Figure 16).

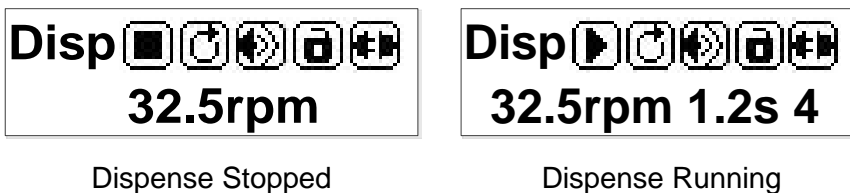


Figure 17. Time Dispense Mode

To set the Time Dispense mode, follow these steps:

- 1) Turn on the power switch to display the main screen.
- 2) Press the **MODE** key to switch to Time Dispense mode ("Disp" shown on the screen).

- 3) Press the **MENU** key to access the Setting menu.
- 4) Set the time unit and duration for each dose, pause time between doses, and set the number of cycles.
- 5) Return to the main screen.

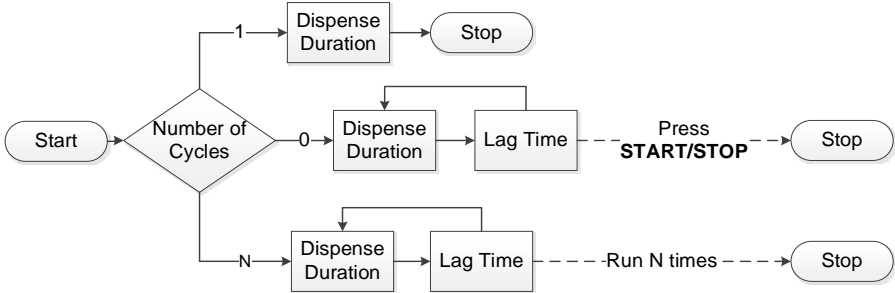


Figure 18. Dispense Cycle Setting

To run Time Dispense, follow these steps:

- 1) Use the **DIRECTION** key to set the running direction as clockwise or counterclockwise.
- 2) Press the **START/STOP** key to begin dispensing.
- 3) During operation, press the **START/STOP** key to stop the pump if necessary.
- 4) A footswitch can also be used to start/stop the pump.

8.7 Logic Level 1 Control Mode (footswitch)

You can use an external logic level signal to control the start and stop functions of the pump while using the keypad to control the direction and speed settings.



Figure 19. Logic Level 1 Control Mode

- 1) Turn off the power. Connect the DB15 connector to the DB15 port

on the rear of the pump, following the wiring instructions shown in *Figure 20* or *Figure 21*.

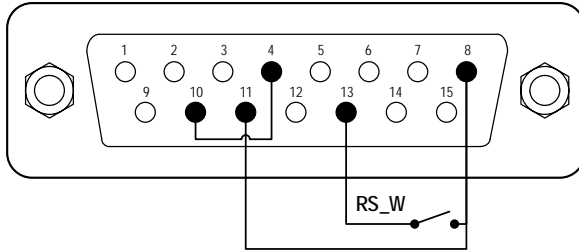


Figure 20. Logic Level 1 Control with Internal 12V Power Source

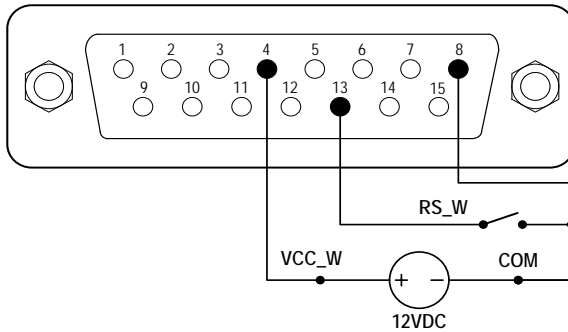


Figure 21. Logic Level 1 Control with External 12V Power Source

- 2) Turn on the power. The pump will display the main screen.
 - 3) Press the **MODE** key to change the mode to Logic Level 1 control mode (shown as “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) Close the switch to start the drive, and open the switch to stop it.
- Note: This mode is used to work with a Time Controller.

8.8 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 22. Logic Level 2 Control Mode

- 1) Turn off the power. Connect the DB15 connector to the DB15 port on the rear of the pump, following the wiring instructions shown in [Figure 23](#) or [Figure 24](#).

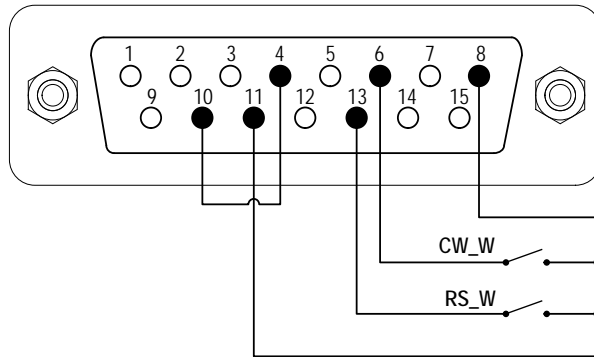


Figure 23. Logic Level 2 Control with Internal 12V Power Source

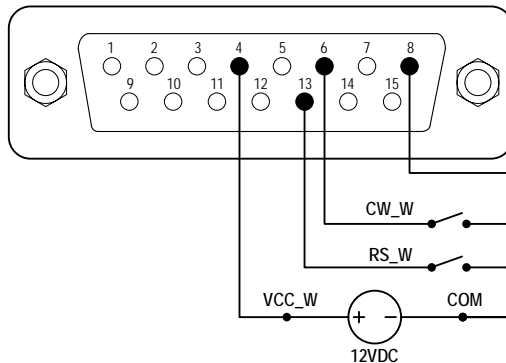
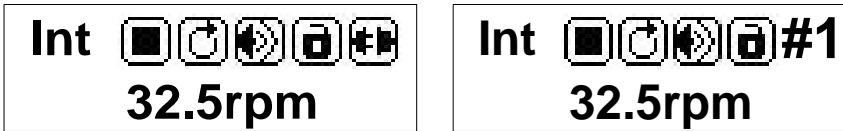


Figure 24. Logic Level 2 Control with External 12V Power Source

- 2) Turn on the power. The pump will display the main screen.
- 3) Press the **MODE** key to change the mode to Logic Level 2 control mode (shown as “lev2” on the screen).
- 4) Press the **UP** or **DOWN** key to adjust the speed.
- 5) When the switch RS_W is closed, the drive will be running at the set speed. When the switch RS_W is open, the drive will stop.
- 6) When the switch CW_W is open, the drive will be running in the clockwise direction. When the switch CW_W is closed, the drive will be running in the counterclockwise direction.

8.9 Communication Mode

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



Communication Disconnected

Communication Connected
The pump number is set to 1.

Figure 25. Communication Mode

- 1) When the power is off, wire the DB15 connector as shown in [Figure 26](#), and connect it to the DB15 port on the rear of the pump. It is recommended to use an external DC power source to avoid electrical interference.

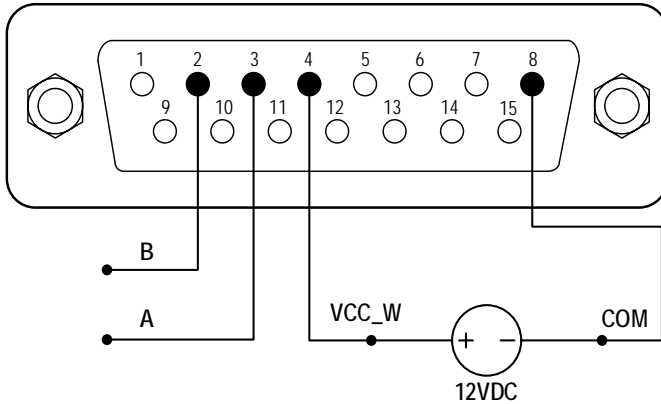


Figure 26. RS485 MODBUS Wiring

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

8.10 Speed Setting

On the main screen, the speed resolution is 0.1 rpm when the speed is between 0.1 and 100 rpm. The speed resolution is 1 rpm when the speed is above 100 rpm. The speed can be set by pressing the **UP** or **DOWN** key. Press the **UP** or **DOWN** key briefly, the last digit of the value will change by 1. Hold the **UP** or **DOWN** key to change the speed continuously and rapidly.

To set the speed to maximum directly, hold the **PRIME** key and then press the **UP** key. To set the speed to a minimum value (0.1 rpm), hold the **PRIME** key and then press the **DOWN** key.

9 Maintenance

9.1 Warranty

The pump drive is covered by a three-year warranty and the pump head is covered by a one-year 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 make sure there is no leakage.
- 2) Avoid covering the fan on the rear of the pump as it helps dissipate heat.
- 3) Do not use water to wash the pump. Keep the pump head dry to avoid damage to the electrical components.
- 4) Do not use chemical solvents to clean the pump and pump head as it may damage the material.

9.3 Malfunction Solutions

No	Malfunction	Description	Solution
1	Hardware	No display	<ol style="list-style-type: none"> 1. Check the power cord 2. Check the fuse. If it was blown, replace it with a 0.5A slow-blow fuse 3. 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

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			<p>between the driver and the main board.</p> <p>4. Check the power voltage for the pump.</p>
3	Hardware	Motor only runs in one direction	Check the connection between the drive board and the main control board.
4	Hardware	Keypad does not work	<p>1. Check the wire connection between the keypad and the main board.</p> <p>2. Check if the key is broken.</p>
5	Hardware	External control does not work	<p>1. Check the wiring of the connector.</p> <p>2. Check if the external control power voltage is provided.</p> <p>3. Check the connections of the external control board.</p>
6	Hardware	RS485 com does not work	<p>1. Check the wiring of the connector.</p> <p>2. Check if the external control power voltage is provided.</p> <p>3. Check the connections of the communication board.</p>
7	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 in External Control Mode.
10	Software	RS485 does not work right	<p>1. Check if the display shows the communication is ready.</p> <p>2. Reset the address of the pump.</p> <p>3. Check whether on the bus there are two pumps using the same address</p>



If a problem cannot be solved, please contact the manufacturer or distributor for assistance.

10 Dimensions

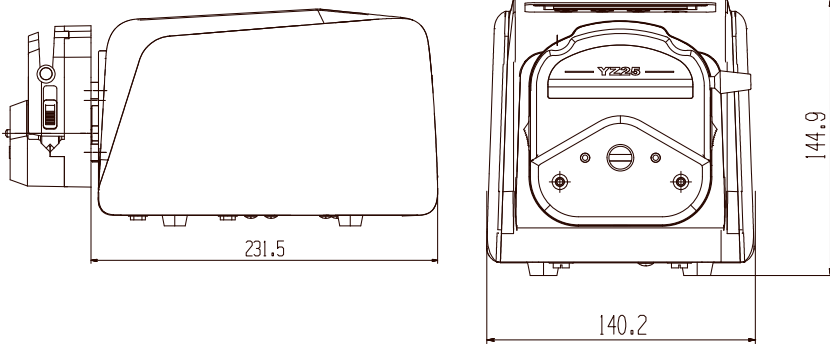
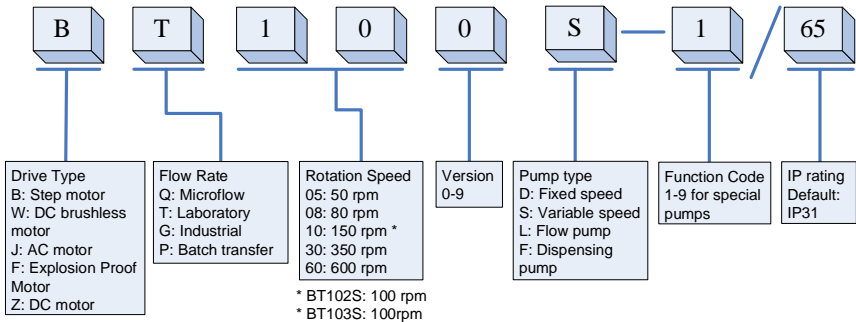


Figure 26. Dimensions (mm)

11 Naming Rule



12 Specifications

Suitable pump heads	YZ15, YZ25, YT15, YT25, DG1, DG2, DT10-18, DT10-28
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Speed resolution	0.1-100 rpm, 0.1 rpm resolution; 100-600 rpm, 1 rpm resolution
Speed accuracy	0.5%
Power supply	AC 90-240V, 50/60Hz
Power consumption	40W
External logic control signal	5V, 12V (standard), 24V (optional)
External analog control signal	0-5V, 0-10V, 4-20mA
Communication interface	RS485 MODBUS, Wi-Fi
Operating condition	Temperature 0~40°C Relative humidity <80%
IP grade	IP31
Display	132x32 LCD
Dimensions (LxWxH)	232x140x145mm
Weight	2.9 kg

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