

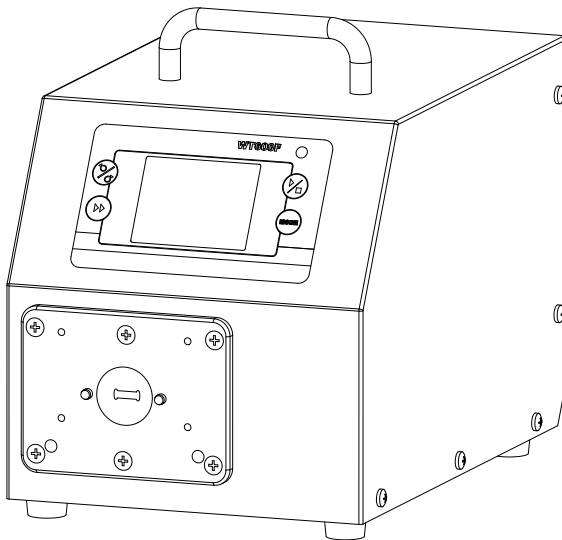


GOLANDER PUMP

Operation Manual

For Intelligent Dispensing Peristaltic Pump

WT300F, WT600F



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Safety Cautions



Danger: Please use correct AC power voltage source shown on the sticker on the equipment to avoid any damage.

Please do not open the case. High voltages exist and are accessible. Use extreme caution when servicing internal components. For maintenance, please contact the manufacturer or distributor directly.

Danger: Turn drive off before removing or installing tubing. Fingers or loose clothing could get caught in drive mechanism.



Warning: Tubing breakage may result in fluid being sprayed from pump. Use appropriate measures to protect operator and equipment.

Warning: Remove power from pump before attempting any maintenance or any cleaning operation is started.

Warning: Remove power from pump before connecting or disconnecting the external control device or communication interface.

Warning: Pump is provided with a grounded plug, it must be well grounded at all times.

Warning: This product is not designed for, nor intended for use in patient connected applications; including, but not limited to, medical and dental use.

1 Description

WT-F intelligent dispensing peristaltic pump provides intuitive and clear interface with color LCD touch screen. There are four operation modes available: Volume Dispense Mode for high accuracy dispense; Time Dispense Mode for high productive efficiency; Copy Dispense Mode can separate fluid to number of equal parts; Flow Mode is for recording the total delivered volume. It adopts intelligent cooling fan control to minimize working noise. Brushless servo drive with large torque to work with multiple pump heads. With RS485 MODBUS interface, the pump is easy to connect to external device, such as computer, human machine interface or PLC. This series pump includes:

- WT300F, flow rate: 0.006-4000 mL/min, speed: 0.1-350 rpm
- WT600F, flow rate: 0.06-6000 mL/min, speed: 0.1-600 rpm

2 Functions and Features

Advantage of peristaltic pump: Peristaltic pump can handle extremely viscous fluids, abrasive slurries and corrosive fluids. There is no seals in contact with the medium pumped and no valves to clog. The inner surfaces are smooth and easy to clean; fluid contacts only the tubing or tube material. Suction lift and priming can be up to 8m water column at sea level. It can handle the most shear sensitive of fluids like latex or firefighting foam with low shearing. It is capable of running dry and pumping fluids with high quantities of entrained air, such as black liquor soap. The high volumetric efficiency allows operation in metering or dosing applications where high accuracy is required. Tubing and tube materials are available for food and pharmaceutical use.

- Color LCD display, touch screen and keypad for operating.
- Reversible direction, start/stop control and adjustable speed.
- Precise motor control technology improves dispense accuracy compared to the traditional time dispense mode.
- Brushless servo drive with large torque to work with multiple pump heads. No maintenance required.
- Anti-drip function ensures dispense accuracy.
- Three dispense mode available. Time Dispense Mode: automatically dispense by setting the duration for each dose, lag time between doses and number of cycles. Volume Dispense Mode: automatically dispense by setting the volume for each dose, lag time between doses and number of cycles. Copy Dispense Mode: automatically dispense by setting the total volume need to dispense, lag time between doses and number of cycles.
- Store five groups of working parameters for each dispense mode (power-off memory).

- Flow rate display and control; cumulative dispense volume display.
- Flow rate calibration.
- 0.2% high precision rotating speed control with 0.1 rpm speed resolution. Professional operating system, configure system with setup wizard.
- Intelligent temperature control to minimize working noise.
- External logic level signal can control start/stop, direction and easy dispense functions; external analog signal can adjust the rotating speed. Signal is optically isolated.
- With RS485 MODBUS interface, easy to be controlled by external device.
- Internal double-deck isolation structure; circuit board with conformal coating makes it dust-proof and moisture proof.
- Anti-electromagnetic interference feature, wide input voltage range for complex power environment.
- Stainless steel enclosure, easy to clean, resistant to the corrosion of the acid, alkali, sodium and organic solvents.
- Drive multi-channels and various types of pump heads.
- Optional footswitch and remote infrared control.

3 Components and Connectors

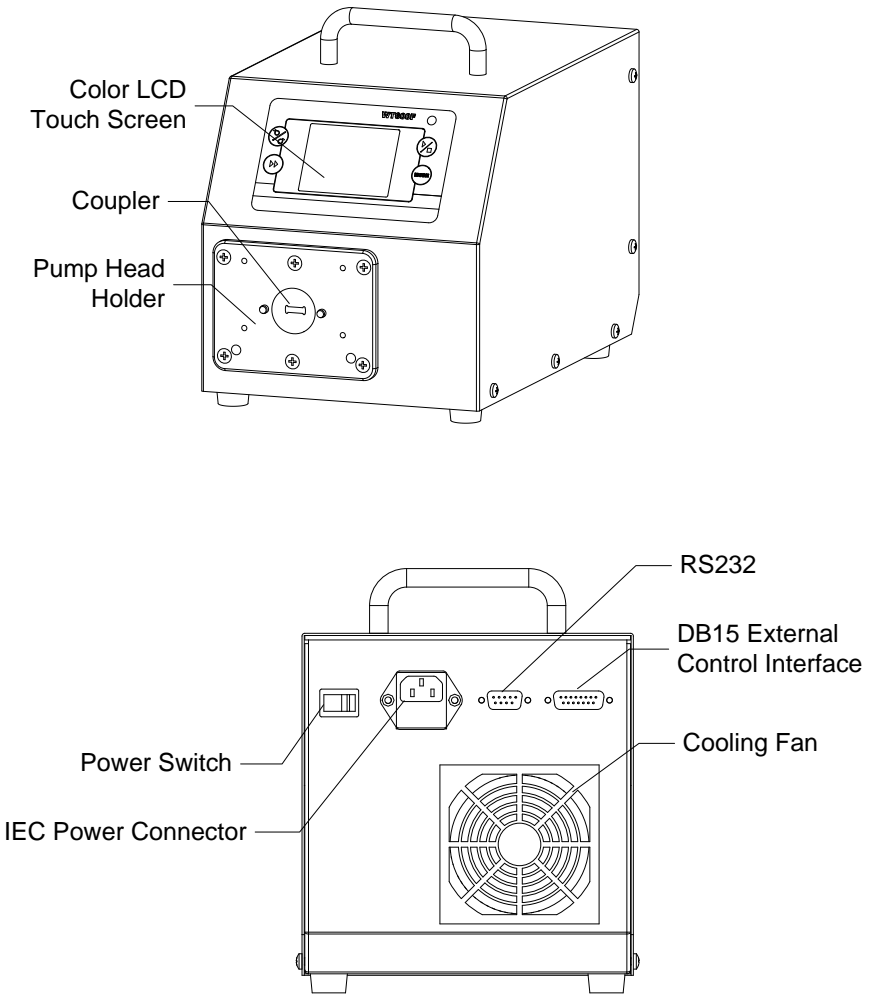


Figure 1. Components and Connectors

4 Display Panel and Operating Keypads

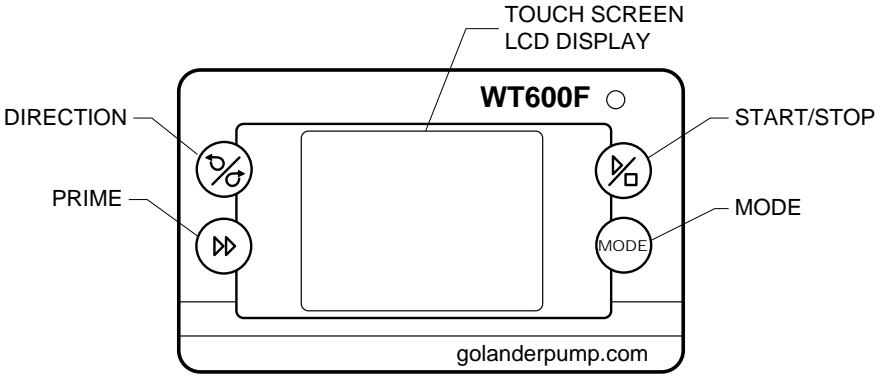


Figure 2. Display Panel

4.1 Keypad



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



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



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



MODE key. When drive is not running, use the MODE key to change the working mode. When keypad is locked, use the MODE key to change the display content.

4.2 LCD Touch Screen Display

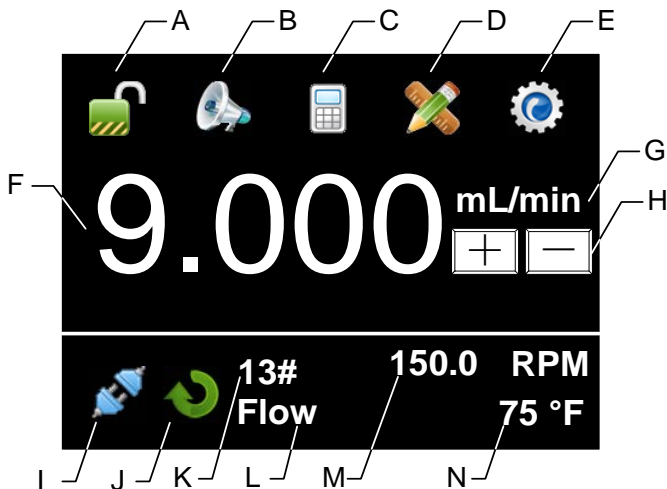


Figure 3. Display screen

4.2.1



A - Keypad Lock

It shows the state of the keypad lock. Press the icon to lock/unlock the keypad. When the keypad is locked, the control mode and system parameter settings can not be changed. Press MODE key to change the display content.

Password can be set to unlock the keypad. It will prevent user from changing the system parameters accidentally.

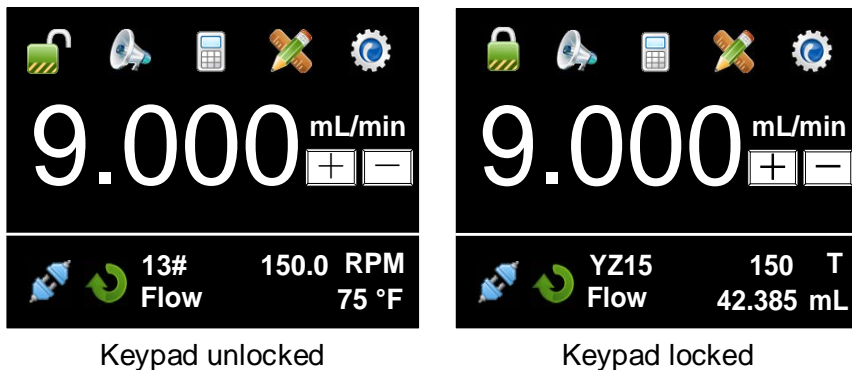


Figure 4. Keypad Lock

4.2.2 B - Tone Button

Press the icon to turn on/off the key tone.



Tone on



Tone off

Figure 5. Key Tone

4.2.3 C - Control Mode

Press the icon to enter the Control Mode interface. There are four control modes available.

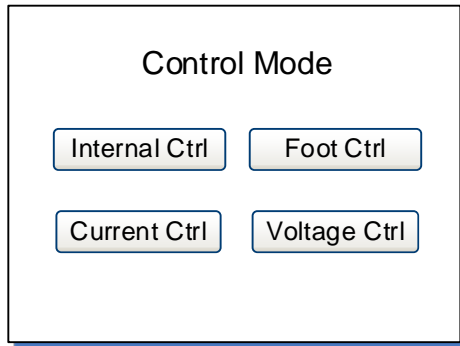


Figure 6. Control Mode

- **Internal Ctrl** - Internal Control Mode. Operate pump with keypad and touch screen.
- **Foot Ctrl** - Footswitch Control Mode. Footswitch controls start/up. Use keypad and touch screen for the other operations.
- **Current Ctrl** - Current Control Mode. External 4-20mA analog current signal controls rotating speed; external logic level signal controls start/stop. The keypad is disabled.
- **Voltage Ctrl** - Voltage Control Mode. External 0-5V or 0-10V analog voltage signal controls rotating speed; external logic level

signal controls start/stop and direction. The keypad is disabled.



Internal Control
Mode



Footswitch
Control Mode



Current Control
Mode



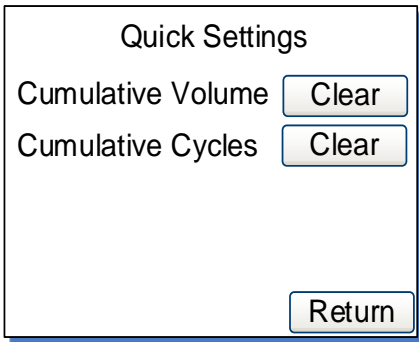
Voltage Control
Mode

Figure 7. Control Mode Icon

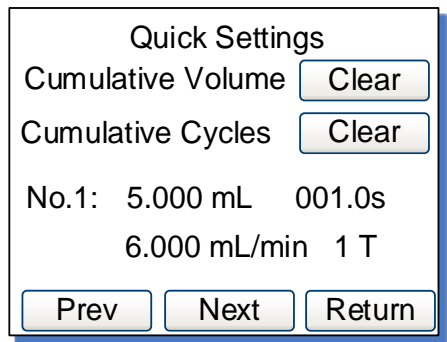


4.2.4 D - Quick Settings

Press the icon to enter Quick Settings interface to reset the cumulative volume and cycles. For Volume Dispense Mode, Time Dispense Mode and Copy Dispense Mode, there are five groups of preset data. User can choose one of them to dispense fluid, and the setting on the main screen will change according to the selected data group.



Flow Mode



Other Modes

Figure 8. Quick Settings



4.2.5 E - System Settings

Press the icon to enter the System Settings menu, and then change the parameters shown on the screen.

4.2.6 F - Flow Rate Setting

It shows current flow rate setting. When the drive is not running, press it to input desired value in the pop-up window. Please pay attention to the range of the value and flow rate unit.

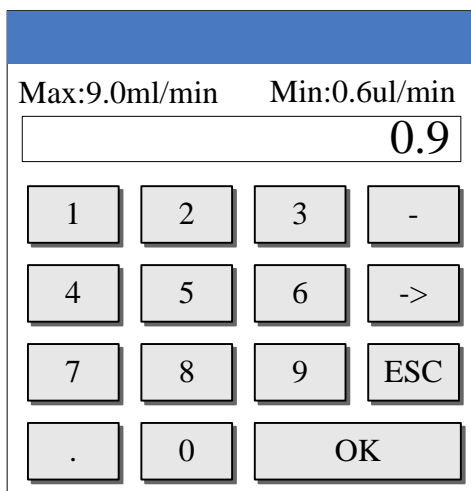




Figure 9. Flow Rate Setting

4.2.7 G - Flow Rate Unit

It shows current flow rate unit. When the drive is not running, press it to change the unit. The allowed units are μ L/min, mL/min and L/min.

4.2.8 H - Fine Adjustment Button

When the drive is running, press the fine adjustment button to adjust the flow rate in real time. Press the  button or  button shortly to increase or decrease the flow rate. Press and hold the buttons to change the value quickly.

4.2.9 I - Communication State

It shows current RS485 communication state.



Communication
connected



Communication
disconnected

Figure 10. Communication State

4.2.10 J - Rotation Direction

It shows current rotation direction. When the drive is not running, it will show one of the following icon.



Clockwise



Counterclockwise

Figure 11. Direction State

When the drive is running, it will change to an animated icon as shown below.



Figure 12. Running Animation

4.2.11 K - Tubing or Pump Head

It shows current configured tubing size or pump head model.

- 17# means the tubing size is 17#.
- ID0.13 means the internal diameter of the tubing is 0.13mm.
- YZ15 means the pump head is YZ15.

4.2.12 L - Working Mode

It shows current working mode, such as Flow Mode, Volume Dispense Mode, Time Dispense Mode or Copy Dispense Mode.

4.2.13 M - Speed or Cumulative Cycles


It shows current speed or cumulative dispense cycles, switched by pressing MODE key. If the speed is higher than the maximum allowed speed, it will show **U_Overflow**; if the speed is lower than the minimum allowed speed, it will show **D_Overflow**. The cumulative cycles can be reset on Quick Settings menu.

4.2.14 N - Internal Temperature or Cumulative Volume

It shows the temperature inside the drive or cumulative volume that the pump has delivered. The cumulative volume can be reset on Quick Settings menu.

The default display temperature is in Fahrenheit. To change display temperature in Celsius, please go to System Information window (see Figure 23), press the “75 °F” area, the display will change to Celsius, which is 24 °C. Press the “24 °C” again, the display will switch back to Fahrenheit.

4.3 System Settings

When the drive is not running, press the icon  to enter System Settings menu.

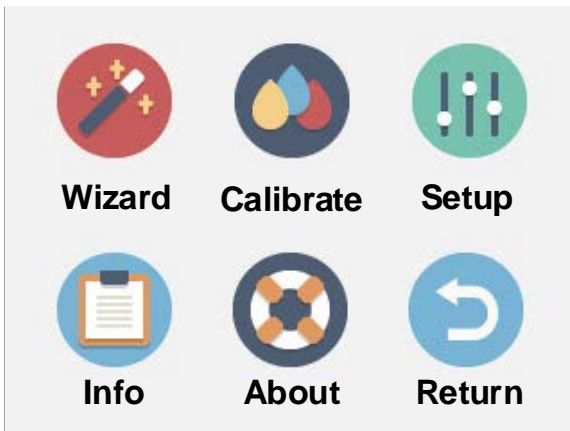


Figure 13. System Settings

4.3.1 Wizard

A wizard to set up the parameters. The system will select appropriate tubing and pump head for you.

4.3.2 Calibrate

Pump will accurately show current flow rate/volume after Flow Rate Calibration.

Note: The calibration is necessary to display flow rate precisely.

4.3.3 Setup

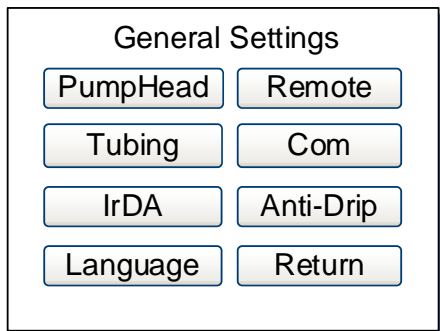


Figure 14. General Settings

- **PumpHead** - Choose the model of the installed pump head.

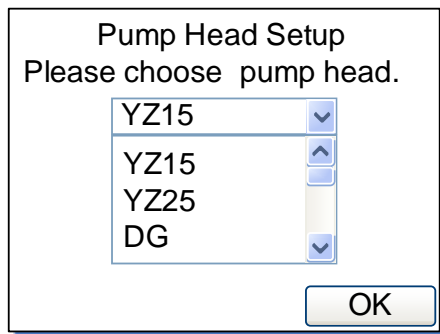


Figure 15. Pump Head Select

- **Tubing** - Choose the appropriate tubing size for selected pump head.

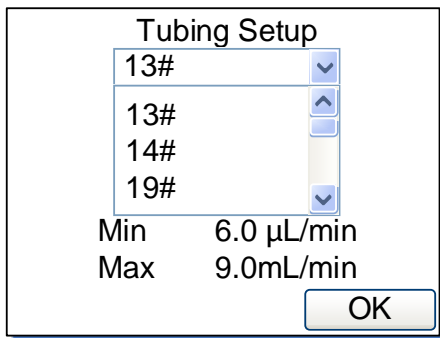


Figure 16. Tubing Select

- **IrDA** - Turn on/off the infrared control function.

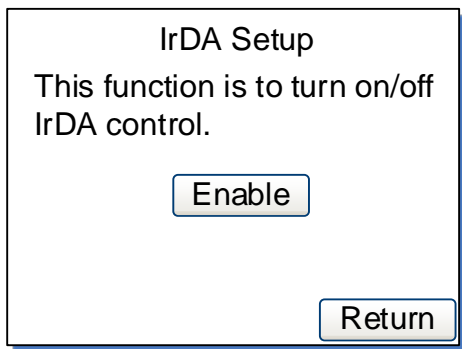


Figure 17. IrDA Setup

- **Language** - Choose display language, Chinese or English.



Figure 18. Language Select

- **Remote**

It is the setting for external control mode: Logic Level control mode or Pulse control mode. When it is set to Logic Level, pump state will change when external switch is closed or open. It is designed for a maintained switch. When it is set to Pulse, pump state will change when the switch is closed then open again. It is designed for a normally open momentary switch.

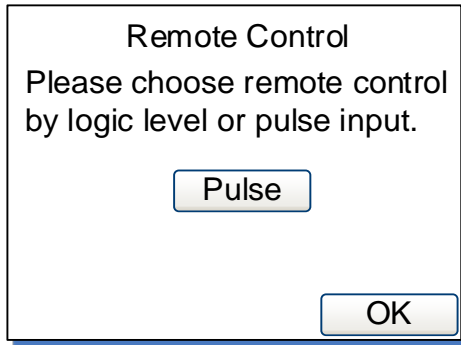


Figure 19. Remote Control Mode

- **Com**

It is the setting for RS485 MODBUS communication including baud rate, transmission mode and pump address. To change the address, click the address number on the screen, then input the value in the pop-up window. Restart the pump to apply the settings.

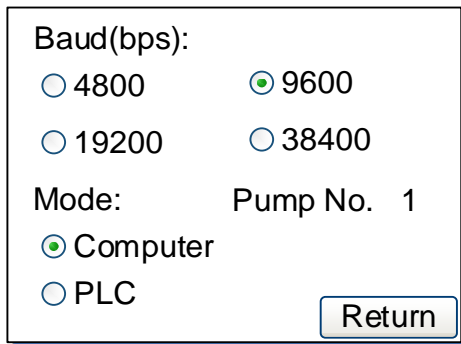


Figure 20. Communication Settings

- **Anti-Drip**

The pump provides deceleration time setting to reduce fluid splash at the end of a dispense. It is the time for the drive to stop from the running speed to 0. In addition, to minimize the drip after a dispense, the drive can reverse direction to draw the fluid back at the end of the tubing. To access this feature, set the reverse angle/rotating speed in the pop-up window. When the angle is set to 0, this feature is disabled.

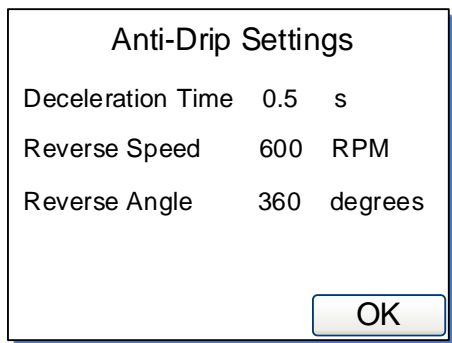


Figure 21. Anti-Drip Settings

4.3.4 Info

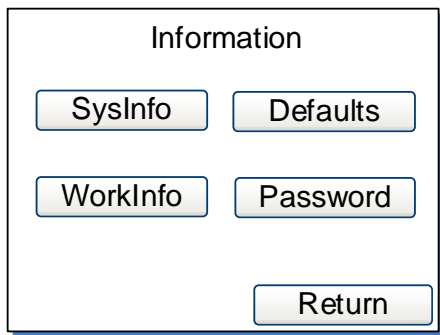


Figure 22. Information

It is about pump information.

- **Sysinfo**

It shows software version, memory size, internal temperature, etc.

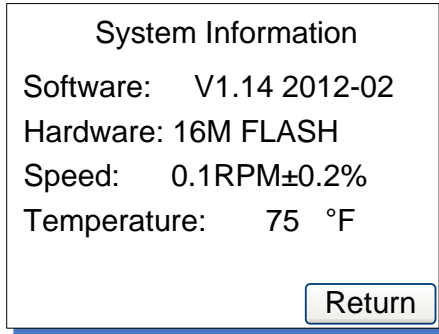


Figure 23. System Information

- **Workinfo**

It shows total power on time, running time and power cycles.

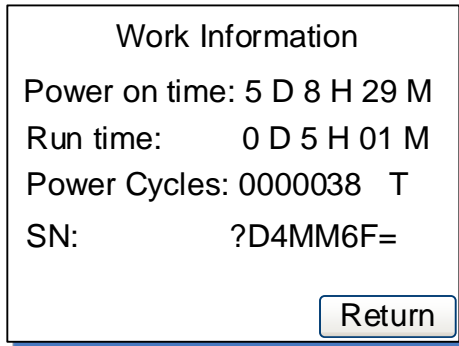




Figure 24. Work Information

- **Defaults**

It is to reset the pump to factory settings. Restart pump to apply the settings. The system can also restore to factory settings by holding

the  and  at the same time when pump powers on; then release the keys after the beep.

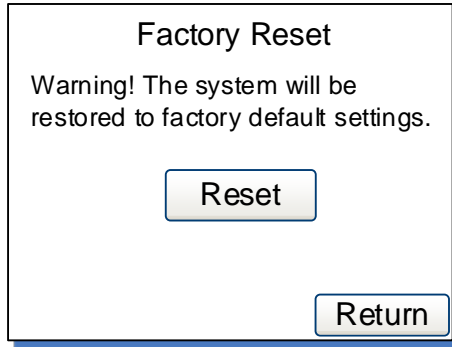


Figure 25. Factory Reset

- **Password**

Set a password to unlock the keypad. It will prevent user from changing parameters accidentally. The default password is empty.

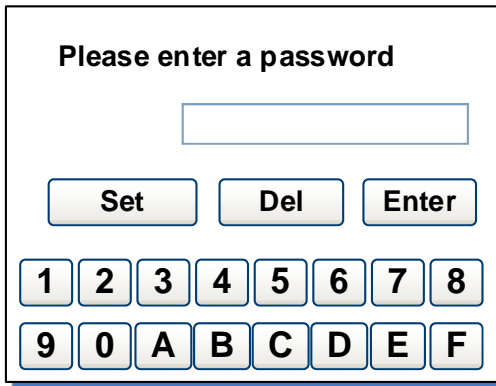


Figure 26. Password

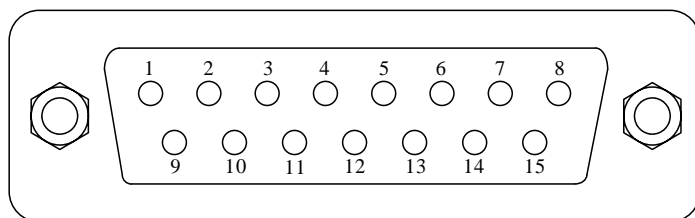
4.3.5 About

It shows the functions and features about the pump.

4.3.6 Return

To return the main display screen.

5 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 | DAC | Analog voltage signal output |
| 6 | CW_W | External input signal to control direction |
| 7 | PWM | Pulse signal output |
| 8 | COM | Ground of external power |
| 9 | AGND | Negative of analog signal input |
| 10 | +12V | Positive of internal +12V power source |
| 11 | GND | Ground of Internal power source |
| 12 | CW | Direction signal output |
| 13 | RS_W | External start/stop signal input |
| 14 | PWM_W | Pulse signal input |
| 15 | RS | Start/stop signal output |

6 Operation Instructions

6.1 Before Operation

- 1) Please check the packing slip to make sure nothing is wrong or damaged in the package. If there is problem, please contact the manufacturer or distributor.
- 2) Read through the instruction.

- 3) There should be more than 200 mm space for the back of the pump when it is running.

6.2 Power Connection

The voltage of the power supply should be marked on the sticker of the pump. Please make sure to use the right power source for the pump. Please plug the power cord into the IEC Power Connector on the rear of the pump and plug the opposite end of the power cord into an electrical outlet. Flip the power switch located on the rear of the pump.

6.3 First Run Wizard

When use the pump at the first time or after factory reset, the system will show welcome screen. The next step is to choose the model number of the pump head installed. The system will run Pump Head Setup -> Tubing Setup -> Anti-Drip setup -> Working Mode setup -> Calibration in sequence. User can set the parameters and operation mode according to the requirement. Pump will save the information and you only need to run the wizard once.

The screenshots show the following steps in the First Run Wizard:

- Welcome:** A screen with the text "Welcome to use First Run wizard. Please check the user manual for details if you have any questions." and a "continue" button.
- Pump Head Setup:** A screen titled "Pump Head Setup Please choose pump head." with a dropdown menu showing options: YZ15, YZ15, YZ25, and DG. An "OK" button is at the bottom right.
- Tubing Setup:** A screen titled "Tubing Setup" with a dropdown menu showing options: 13#, 13#, 14#, and 19#. Below the menu, it shows "Min 6.0 μL/min" and "Max 9.0 mL/min". An "OK" button is at the bottom right.
- Anti-Drip Settings:** A screen titled "Anti-Drip Settings" with the following parameters: "Deceleration Time 0.5 s", "Reverse Speed 600 RPM", and "Reverse Angle 360 degrees". An "OK" button is at the bottom right.

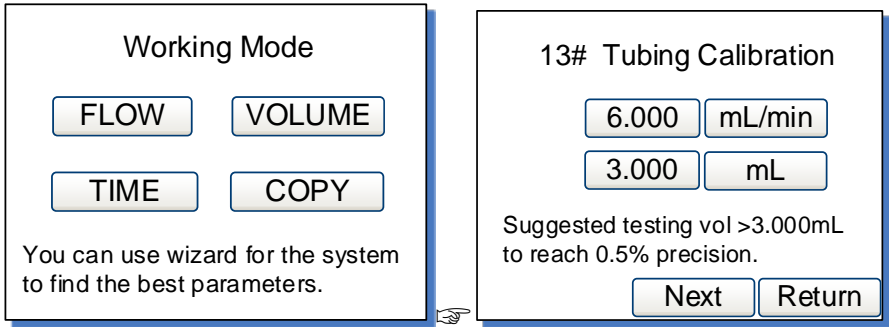




Figure 27. First Run Wizard

6.4 Flow Rate Calibration

The calibration must be done when

- First time to use the pump
- Pump head is changed
- Tubing is replaced
- Transfer fluid in one channel with dual pump heads
- Tubing is reinstalled
- After continuous work for a long time

How to calibrate

- 1) Install pump head and tubing.
- 2) In the General Settings window, set the model number of the installed pump head.
- 3) In the Flow Mode window, press PRIME  to prime the pump.
- 4) When the drive is not running, press System Settings icon , then select Calibrate.

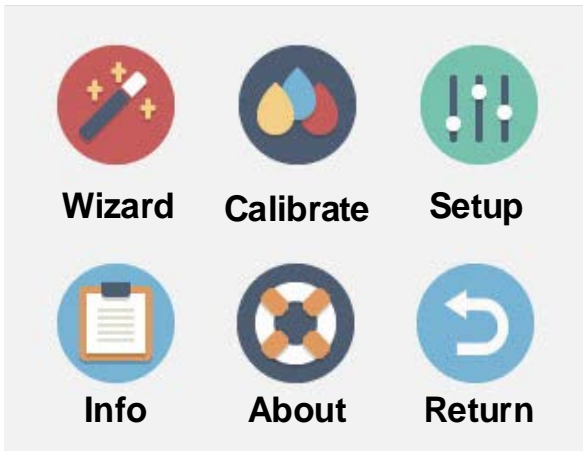


Figure 28. System Settings

- 5) In calibration wizard window, system shows the calibration of current selected tubing, flow rate and fluid volume.

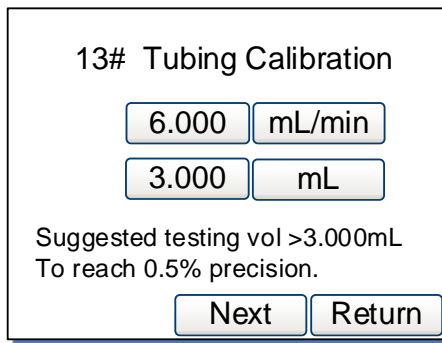


Figure 29. Flow Rate Calibration

The flow rate 6.000 mL/min is the desired flow rate and 3.000 mL is the fluid volume need to test. The values or the units can change directly when press the button. Press Next button to enter the calibration window, or press the Return button to exit the wizard to the System Settings window.

Note: The fluid volume should not be less than the suggested value.

- 6) Test window shown below.

Press start/stop key to test, then input the data.

| | | |
|-------|-------|----|
| Test1 | 0.000 | mL |
| Test2 | 0.000 | mL |
| Test3 | 0.000 | mL |

Prev Next Return

Figure 30. Calibration

Press START/STOP key, pump will start to transfer fluid. Wait for the pump to finish testing, and then measure the volume of the delivered fluid. Repeat the above steps couple more times, and enter the results of the Test1, Test 2 and test 3 in the calibration window. Please pay attention to the unit to make sure it is correct. Press Next to enter Analyze and Calculate window.

If you want to modify the test flow rate and liquid volume, press Prev button to re-enter the values.

Note: If there is an accident during the process of the test, please press START/STOP key to stop the test.

Input one set or multiple sets of testing data to the pump, the system will calculate the average value automatically.

7) The correction testing result will be calculated and the old value is also displayed on the screen for reference only. The new value and old value would be different. However, if the ratio of new to old value is less than 0.5 or higher than 2, please check the following.

- Volume measurement
- The volume unit setting
- The model of the pump head setting
- The tubing size setting
- The liquid viscosity if it is too high
- If dual pump heads are used for one channel

If no problem found, press OK button to save the new value.

Otherwise, press Prev to test again. Or, press Return to exit without saving the new value and return to the System settings window.

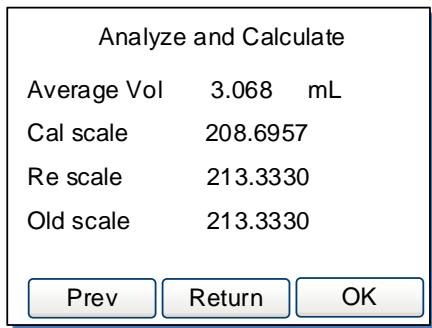


Figure 31. Analyze and Calculate

If there is no data input to the system, it will show the window as below. Please press Prev to test again or just press Return.

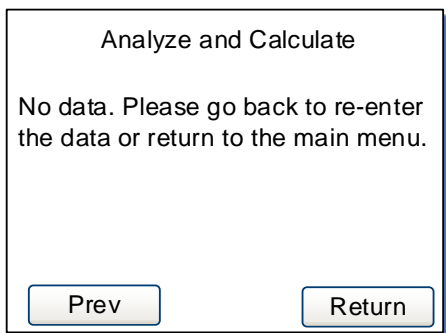


Figure 32. No Input Data

6.5 Working Mode

When the drive is not running, press MODE key to enter Working Mode window as shown below.

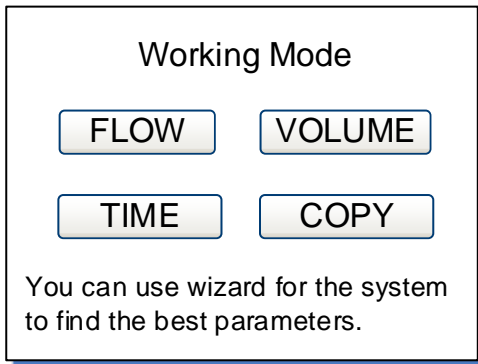


Figure 33. Working Mode

- **FLOW - Flow Mode**

Pump will be running according to the set flow rate, and record the cumulative fluid volume

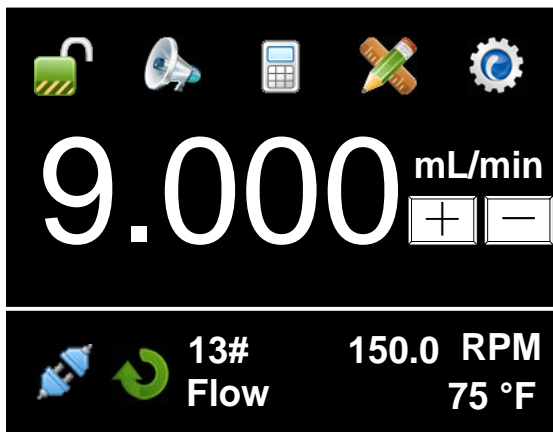


Figure 34. Flow Mode

- **VOL - Volume Dispense Mode**

Pump will dispense by setting dispense volume for each dose, lag time between doses and number of cycles. System will calculate duration time for each dose automatically.

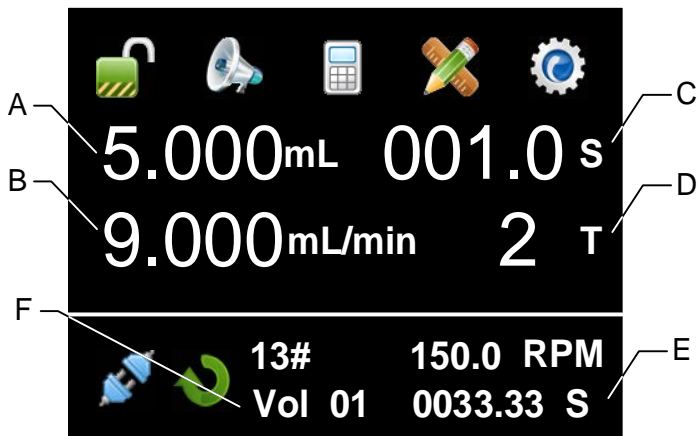


Figure 35. Volume Dispense Mode

A - Dispense volume for each dose, μL , mL or L.

B - Dispense flow rate, $\mu\text{L}/\text{min}$ or mL/min.

C - Lag time. The time between doses.

D - Dispense cycles. When set dispense cycles to 0, the drive will keep running until START/STOP key is pressed. When set dispense cycles to 1, the drive will run only once, and the lag time setting is invalid. When set dispense cycles to more than 1, the drive will run the set number of cycles then stop.

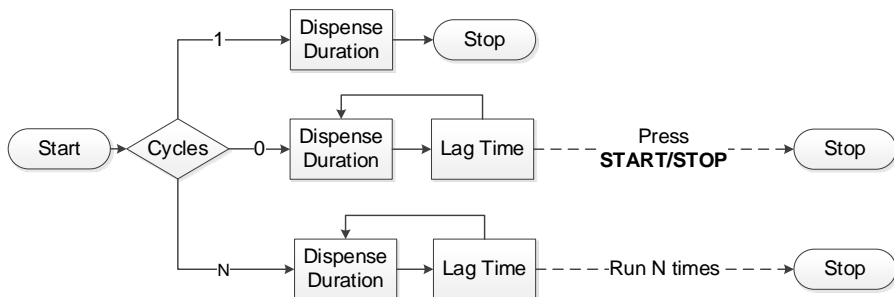


Figure 36. Dispense Cycles

E - Dispense duration for each dose. According to the dispense volume and time, system will calculate dispense duration automatically.

F - Volume Dispense Mode, with group 1 data. The data group can

be selected from the Quick Settings menu.

• **TIME - Time Dispense Mode**

Pump will dispense by setting the dispense duration for each dose, lag time between doses and number of cycles. System will calculate dispense volume for each dose automatically.

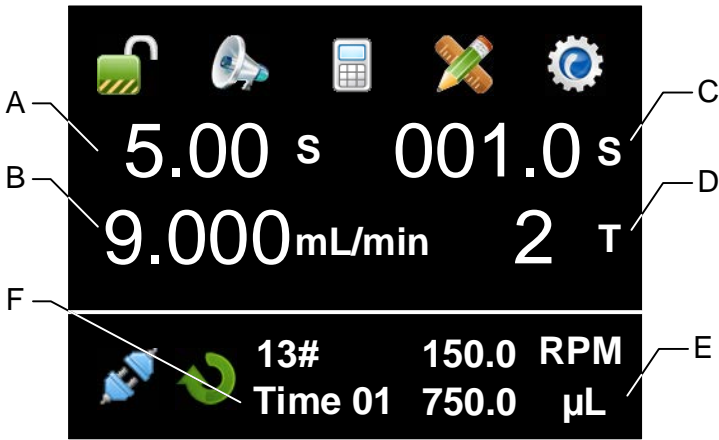


Figure 37. Time Dispense Mode

A - Dispense duration for each dose

B - Dispense flow rate, mL/min or L/min.

C - Lag time. The time between doses.

D - Dispense cycles. When set dispense cycles to 0, the drive will keep running until START/STOP key is pressed. When set dispense cycles to 1, the drive will run only once. The lag time setting is invalid. When set dispense cycles to more than 1, the drive will run the set number of cycles then stop.

E - Dispense volume for each dose. According to the dispense duration and flow rate, system will calculate dispense volume for each dose automatically.

F - Time Dispense Mode, with group 1 data. The data group can be selected from the Quick Settings menu.

• **COPY - Copy Dispense Mode**

Pump will dispense by setting total volume need to dispense, lag

time between doses and number of dispense cycles. System will calculate dispense volume for each dose automatically.

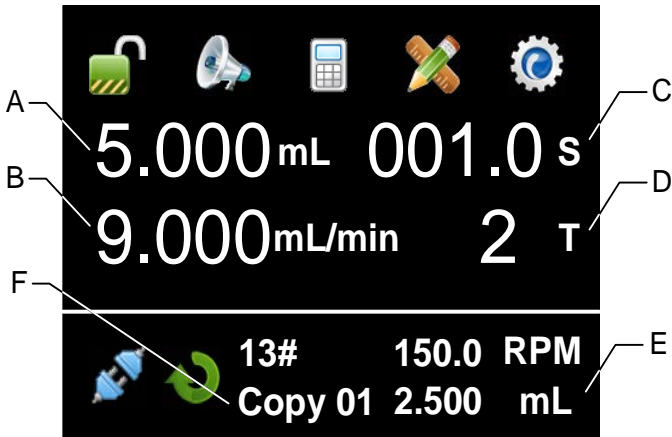


Figure 38. Copy Dispense Mode

A - Total dispense volume, μL , mL or L

B - Dispensing flow rate, $\mu\text{L}/\text{min}$, mL/min

C - Lag time. The time between doses.


D - Dispense cycles. When set dispense cycles to 0, the drive will keep running until START/STOP key is pressed. When set dispense cycles to 1, the drive will run only once. The lag time setting is invalid. When set dispense cycles to more than 1, the drive will run the set number of cycles then stop.

E - Dispense volume for each dose. According to the total dispense volume and number of cycles, system will calculate the dispense volume for each dose automatically.

F - Copy Dispense Mode, with group 1 data. The data group can be selected from the Quick Settings menu.

6.6 Run Wizard

The system will help you to choose the appropriate pump head and tubing size automatically by running this wizard.

- 1) When the drive is not running, press the icon , then select Wizard. Pump will display Welcome screen. Press Next to enter

parameter setup interface.

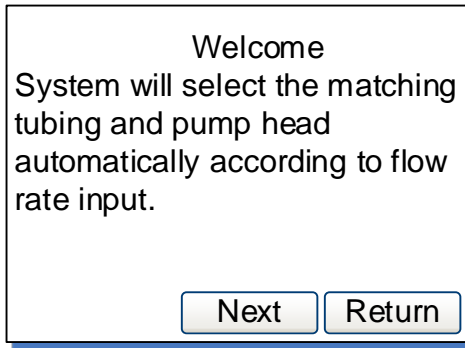


Figure 39. Welcome Screen

2) Input the required values as shown below.

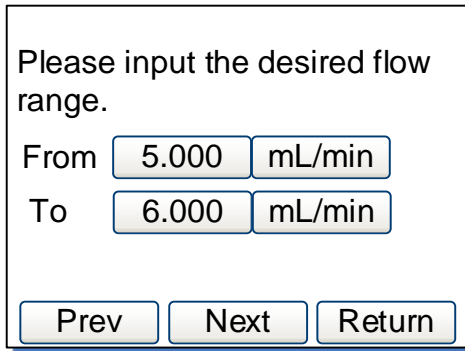


Figure 40. Flow Mode

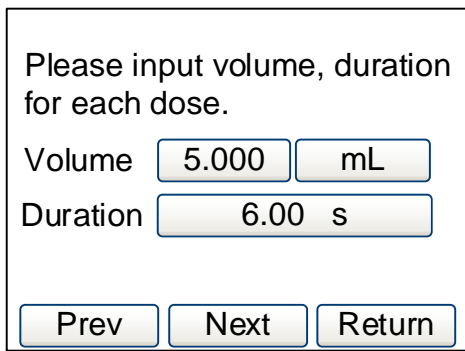


Figure 41. Volume/Time Dispense Mode

Please input total volume, cycles and duration for each dose.

TotalVol

Cycles

Duration

Figure 42. Copy Dispense Mode

- 3) Press Next button, system will list appropriate pump heads automatically. Select the desired pump head and tubing, press Next to set up lag time and cycles. If there is no pump head listed, go back to re-enter the data.

Please select one set of the matching pump head and tubing.

| | | |
|------|-----|----------------------------------|
| YZ15 | 13# | <input type="button" value="v"/> |
| YZ15 | 13# | <input type="button" value="^"/> |
| YZ15 | 14# | <input type="button" value="v"/> |
| YZ15 | 19# | <input type="button" value="v"/> |

Figure 43. Appropriate Pump Heads List

No matching pump head found.

Figure 44. No Appropriate Pump Head

- 4) Other Parameter Settings, for lag time between doses and number of cycles.

Other Parameter Settings

Time lag s

Cycles T

Figure 45. For Volume/Time Dispense Mode

Other Parameter Settings

Time lag s

Figure 46. For Copy Dispense Mode

6.7 External Control Mode

On this mode, external logic level signal controls direction and start/stop. External analog signal controls rotating speed. The keypad is disabled. The analog signal could be 0-5V, 0-10V or 4-20mA. By default, the signal is 0-5V. For 0-10V or 4-20mA, the jump setting on the analog signal control board has to be changed.

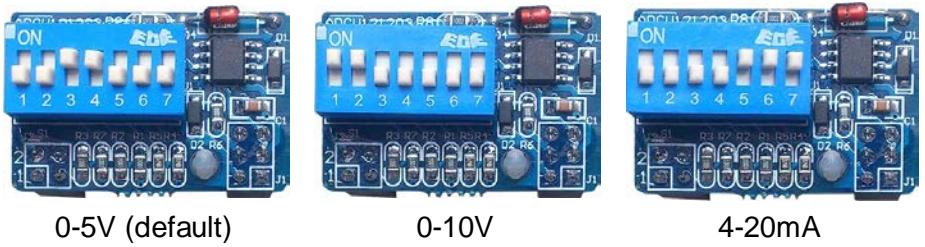


Figure 47. Analog Signal Control Board Setting

To control pump by external signal

- 1) Switch the power off. Wire the DB15 connector as shown on [Figure 48](#) or [Figure 49](#), and connect it to the DB15 port on the rear of the pump.

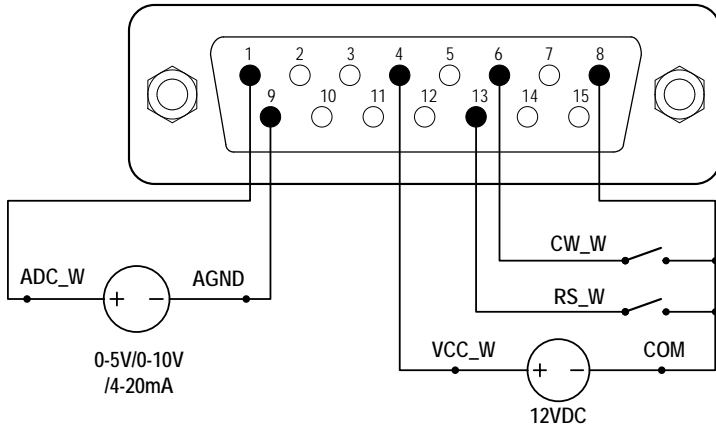


Figure 48. DB15 Wiring with External 12VDC Power Source

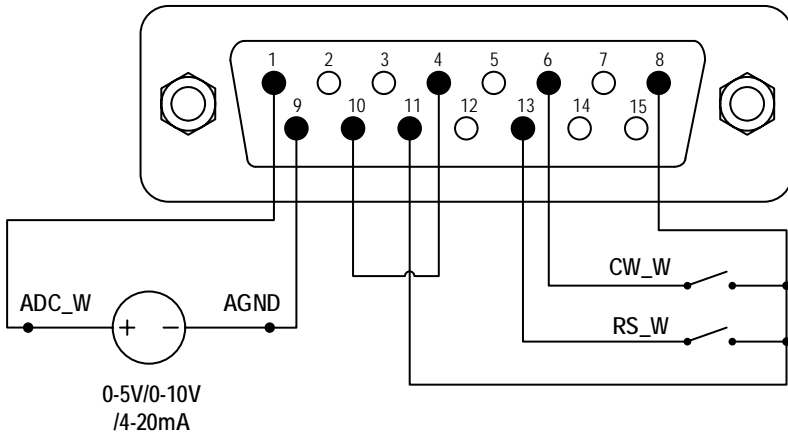





Figure 49. DB15 Wiring with Internal 12VDC Power Source

- 2) Turn on the power switch. Pump will display the main screen.
- 3) Press  to set Control Mode to voltage  or current .
- 4) Turn on the external analog signal power source.
- 5) When set the Remote Control Mode to Logic Level, close the external RS_W switch, the drive will run and the speed will change according to the intensity of the analog input signal. Open RS_W switch to stop the drive.
When CW_W switch is open, the drive will run in clockwise direction; when CW_W switch is closed, the drive will run in counterclockwise direction.
- 6) When set the Remote Control Mode to Pulse, close then open the external RS_W switch, the drive will run and the speed will change according to the intensity of the analog input signal. Close and open RS_W switch again to stop the drive.
When close then open the external CW_W switch, the drive will run in clockwise direction; when close then open CW_W switch again, the drive will run in counterclockwise direction.

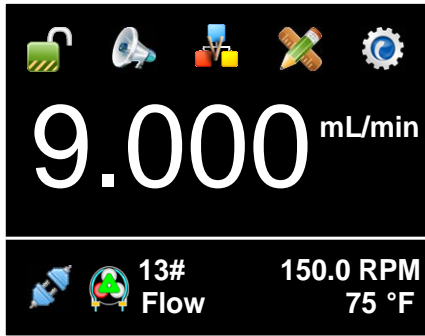


Figure 50. Voltage Control Mode

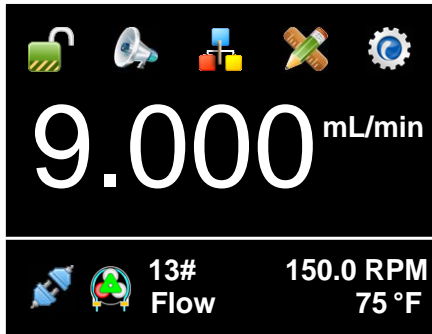


Figure 51. Current Control Mode

Note: The external DC power source can be 5V, 12V or 24V. If it is 24V, 1.5K resistor is needed to protect internal circuit.

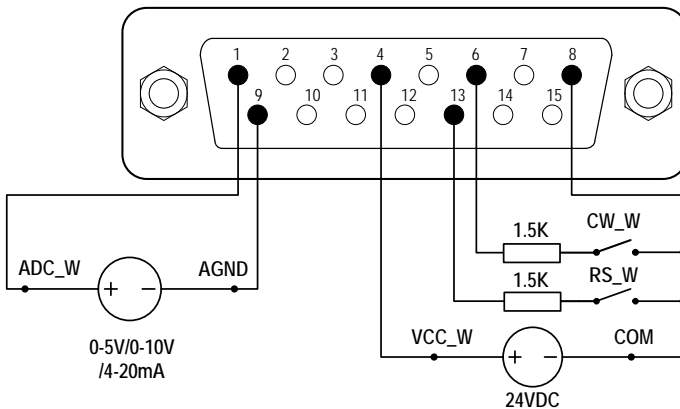


Figure 52. DB15 Wiring with External 24VDC Power Source

6.8 Communication Mode

The RS485 interface supports standard MODBUS protocol. Pump can be controlled by external device via the communication port. Please refer to the [Communication Instruction manual](#) for the parameters and supported commands.

To work with communication mode

- 1) Turn the power off. Wire the DB15 connector as shown on [Figure 53](#), and connect it to the DB15 port on the rear of the pump. External DC power source is recommend to avoid electrical interference.

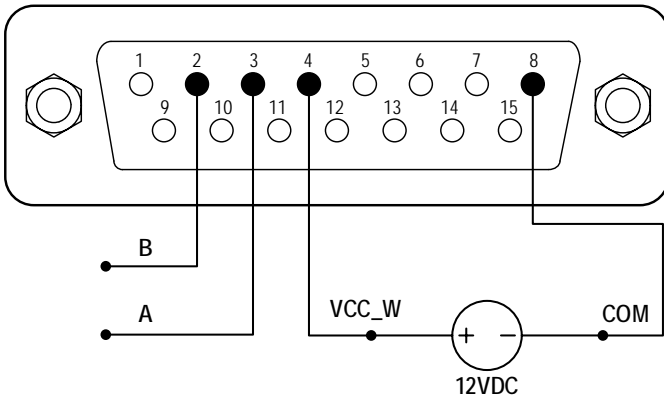




Figure 53. RS485 MODBUS Wiring

- 2) Turn the power on. Pump will display the main screen.
- 3) On [Internal Control Mode](#), when the main screen shows , the communication is connected. If shows , the communication is disconnected.
- 4) Control pump with communication interface.

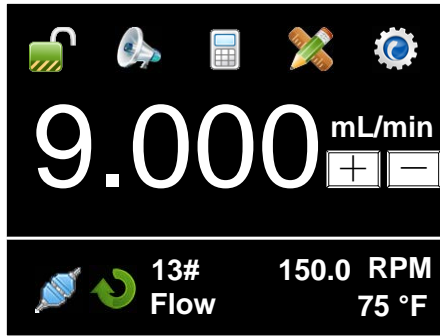


Figure 54. Communication Connected

6.9 Footswitch

To use a footswitch to control start and stop

- 1) Power pump off. Wire the DB15 connector as shown on [Figure 55](#) or [Figure 56](#), and connect it to the DB15 port on the rear of the pump.

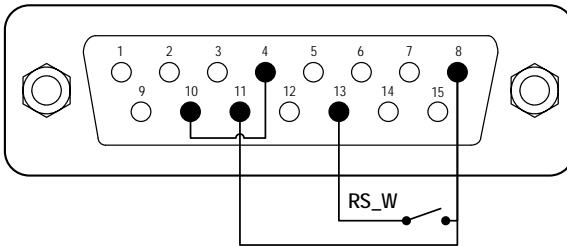


Figure 55. Control Start/Stop with Internal 12V Power Source

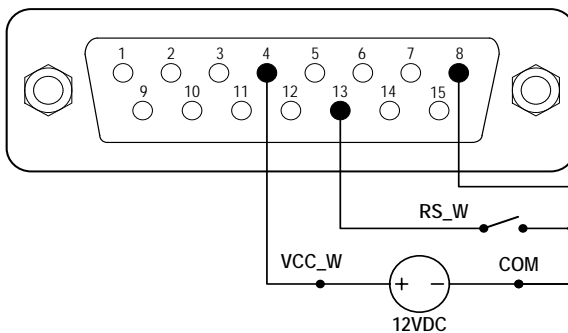


Figure 56. Control Start/Stop with External 12V Power Source

- 2) Turn the power on. Pump will display the main screen.
- 3) On Internal Control Mode, if pump is set to Volume, Time or Copy Dispense Mode, when the switch RS_W is closed then open, pump will start to dispense.
- 4) On Footswitch Control Mode, if Remote Control Mode is set to Logic Level, when the switch RS_W is closed, the drive will start; when the switch is open, the drive will stop.
- 5) On Footswitch Control Mode, if Remote Control Mode is set to Pulse, when the switch RS_W is closed then open, the drive will start; when the switch is closed then open again, the drive will stop.

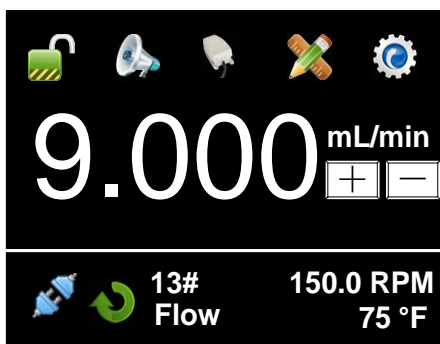


Figure 57. Footswitch Control

7 Maintenance

7.1 Warranty

The product comes with one-year labor and parts warranty. The limited warranty does not cover any damage that is caused by improper usage and handling.

7.2 Regular Maintenance

- 1) Always check the tubing and connections to make sure there is no leakage.
- 2) Do not cover the fan on the rear of the pump.
- 3) Do not use water to wash the pump. Keep pump head dry.
- 4) Do not use chemical solvents to clean pump and pump head.

7.3 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 1A slow-blow fuse 3. Check the internal power cord connection inside the pump. 4. Check the wire connection between LCD and main control board. |
| 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 motor and driver board. 3. Check the wire connection between the driver and the main board. 4. Check the power voltage for the pump. |
| 3 | Hardware | Motor is trembling | <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 | Keypad does not work | <ol style="list-style-type: none"> 1. Check the wire connection between keypad and the main board. 2. Check if the key is broken. |
| 6 | Hardware | External control does not work | <ol style="list-style-type: none"> 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 | <ol style="list-style-type: none"> 1. Check the wiring of the connector. 2. Check if the external control power |

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| | | | |
|----|----------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | work | voltage is provided. 3. Check the connections of the communication board. |
| 8 | Hardware | Noisy when running | Check the screws and level on pump head to make sure they are secure. |
| 9 | Software | External control does not work | Check if pump is on External Control Mode. |
| 10 | Software | RS485 does not work right | 1. Check if the display shows 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 the problem can not be solved, please contact the manufacturer or distributor.

8 Dimensions

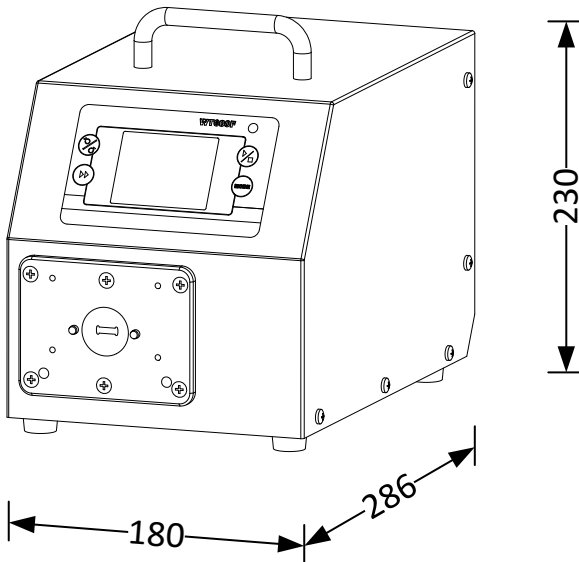
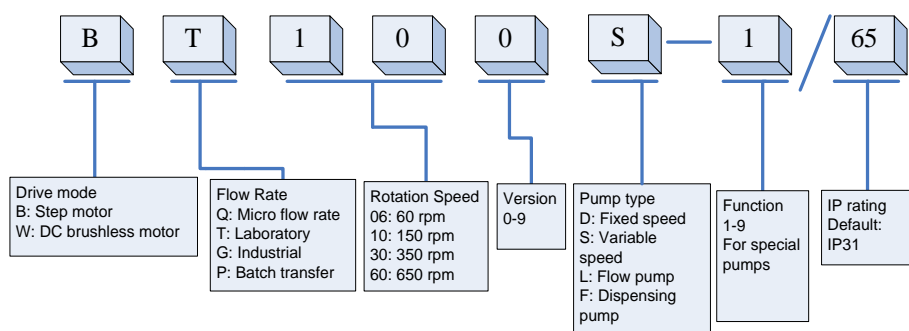


Figure 58. Dimensions (mm)

9 Naming Rule



10 Specifications

| | |
|-------------------------------------|-------------------------------------------------------------|
| Speed resolution | 0.1 rpm resolution |
| Speed accuracy | 0.2% |
| Power supply | AC 220V \pm 10% 50Hz/60Hz; AC 110V \pm 10% 50Hz/60Hz |
| Power consumption | WT300F < 100W; WT600F < 200W |
| External logic level control signal | 5V, 12V (standard), 24V (optional) |
| External analog control signal | 0-5V (standard); 0-10V, 4-20mA (optional) |
| Communication interface | RS485 MODBUS |
| Operating condition | Temperature 0~40°C, Relative humidity <80% |
| IP grade | IP31 |
| Display | TFT Touch Screen LCD, 65536 Colors |
| Dimensions (LxWxH) | 286 x 180 x 230 mm (11.26 x 7.09 x 9.06 inch) |
| Weight | WT300F: 5.8 kg (12.8 lbs); WT600F: 6.2 kg (13.67 lbs) |

WT300F Suitable Pump Heads and Tubing, Flow Parameters

| Drive type | Pump head | Ch | Tubing size (mm) | Flow rate per channel (mL/min) |
|------------|-----------|----|--------------------------------|--------------------------------|
| WT300F | YZ15 | 1 | 13# 14# 16# 19# 25# 17# | 0.006~990 |
| | YZ25 | 1 | 15# 24# | 0.16~990 |
| | 2 x YZ15 | 2 | 13# 14# 16# 19# 25# 17# | 0.006~990 |
| | 2 x YZ25 | 2 | 15# 24# | 0.16~990 |
| | 4 x YZ15 | 4 | 13# 14# 16# 19# 25# 17# | 0.006~990 |
| | 4 x YZ25 | 4 | 15# 24# | 0.16~990 |
| | YT15 | 1 | 13# 14# 16# 19# 25# 17# 18# | 0.006~1300 |
| | YT25 | 1 | 15# 24# 35# 36# | 0.16~1600 |
| | 2 x YT15 | 2 | 13# 14# 16# 19# 25# 17# 18# | 0.006~1300 |
| | 2 x YT25 | 2 | 15# 24# 35# 36# | 0.16~1600 |
| | 4 x YT15 | 4 | 13# 14# 16# 19# 25# 17# 18# | 0.006~1300 |
| | 4 x YT25 | 4 | 15# 24# 35# 36# | 0.16~1600 |
| | DT15-14 | 1 | 16# 19# 25# 17# | 0.05~930 |
| | DT15-24 | 2 | 16# 19# 25# 17# | 0.05~930 |
| | DT15-44 | 4 | 16# 19# 25# | 0.05~610 |
| | KZ25 | 1 | 15# 24# 35# 36# | 2.5~3500 |
| | 2 x KZ25 | 2 | 15# 24# 35# 36# | 2.5~3500 |
| | DMD25 | 1 | 15# 24# 35# 36# | 3~4000 |

WT600F Suitable Pump Heads and Tubing, Flow Parameters

| Drive type | Pump heads | Ch | Tubing size (mm) | Flow rate per channel (mL/min) |
|------------|------------|----|-------------------------|--------------------------------|
| WT600F | YZ15 | 1 | 13# 14# 16# 19# 25# 17# | 0.06~1700 |
| | YZ25 | 1 | 15# 24# | 1.7~1700 |
| | 2 x YZ15 | 2 | 13# 14# 16# 19# 25# 17# | 0.06~1700 |
| | 2 x YZ25 | 2 | 15# 24# | 1.7~1700 |

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| | | | | |
|--|----------|---|--------------------------------|-----------|
| | YT15 | 1 | 13# 14# 16# 19# 25# 17# 18# | 0.06~2300 |
| | YT25 | 1 | 15# 24# 35# 36# | 1.7~2900 |
| | 2 x YT15 | 2 | 13# 14# 16# 19# 25# 17# 18# | 0.06~2300 |
| | 2 x YT25 | 2 | 15# 24# 35# 36# | 1.7~2900 |
| | KZ25 | 1 | 15# 24# 35# 36# | 2.5~6000 |