StonyLab®

Dual-Control Syringe Pump

Operation Manual

(Please read the instruction carefully before you use the machine)

Contents

Preface

Thank you for choosing StonyLab's product.

This product is designed, developed, and manufactured by StonyLab, ensuring that all performance parameters meet our strict design requirements and factory acceptance standards.

To fully understand the product features and to ensure safe operation, please read this user manual carefully before use and keep it properly for future reference.

This unit is equipped with a 7-inch color display, providing an enhanced operating experience with clear and intuitive data visualization. LED indicator lights are integrated to allow convenient monitoring of the operating status.

User Information

- Upon receipt, please inspect the product for any damage and verify that all accessories are complete. If there is any uncertainty regarding operation or if the product will be used in special applications, please contact qualified technical personnel for consultation prior to use.
- When this product is used in combination with other equipment, please ensure that the configuration complies with relevant regulations, standards, and operating principles.
- During the warranty period, do not disassemble any components of the equipment or open the control cabinet without authorization, as this may cause damage to internal components.
- Before modifying any control parameters during operation, please read this manual carefully and proceed only after confirming that the operation is completely safe.

Safety Statement

- Any operation involving potential safety hazards must be carried out only when the equipment is stopped and the power supply is disconnected.
- Please use only the specified power supply for this unit (AC 220 V ±10%, 50 Hz).
- To ensure personnel and operational safety, do not insert hands or any part of the body into moving components.
- For the safety of both the equipment and personnel, proper and effective grounding of the equipment is mandatory.
- When connecting to a high-voltage power supply, do not allow live terminals or connectors to come into contact with metal components.
- This product must not be used for clinical or medical applications.

1. Product Overview

1.1 Basic Product Specifications

(1) Input Voltage: AC 220 V ±10%, 50 Hz

(2) Hardware Configuration: The unit is equipped with a 7-inch color display, providing an enhanced operating experience with clear and intuitive data visualization. Integrated LED indicator lights enable convenient monitoring of the operating status.

(3) Overall Dimensions: 270 (L) x 219 (W) x 200 (H) mm

1.2 Product Description

(1) Micro Syringe Pump Operating Modes: Injection / Withdrawal / Injection - Withdrawal / Withdrawal - Injection

(2) Number of Channels: Two independently controlled drive modules, each with two channels, providing a total of four channels.

(3) Maximum Stroke: 110 mm

(4) Stroke Resolution: 0.156 μm

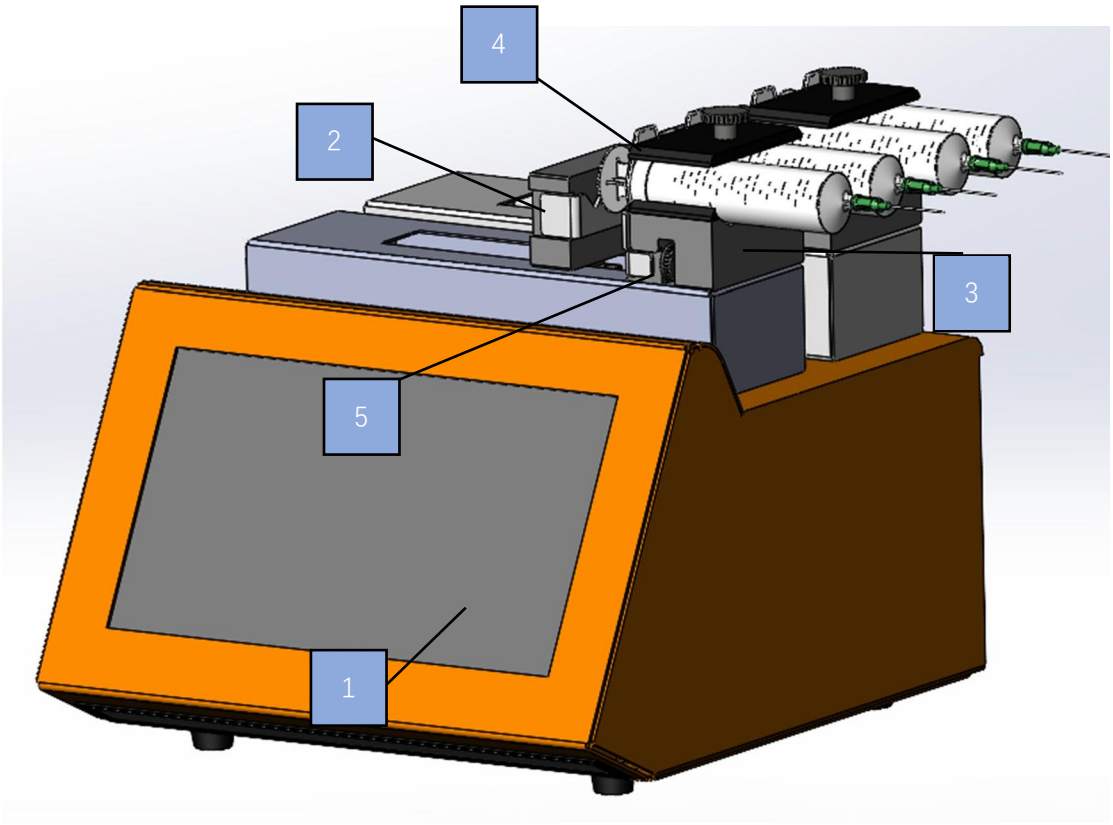
(5) Linear Speed Range: 5 μm/min to 65 mm/min (Flow rate = linear speed x internal cross-sectional area of the syringe)

(6) Syringe Selection: Built-in syringe libraries covering major manufacturers and common syringe models are provided. In addition, up to 10 custom syringe parameter sets can be defined by the user.

(7) Flow Rate Calibration: Calibration methods are provided, and calibration coefficients can be entered and stored in the system.

(8) Power-Off Memory: After power is restored, the user may choose to resume operation based on the parameters and status prior to power loss, without the need to re-enter settings.

2. Appearance Overview and Configuration



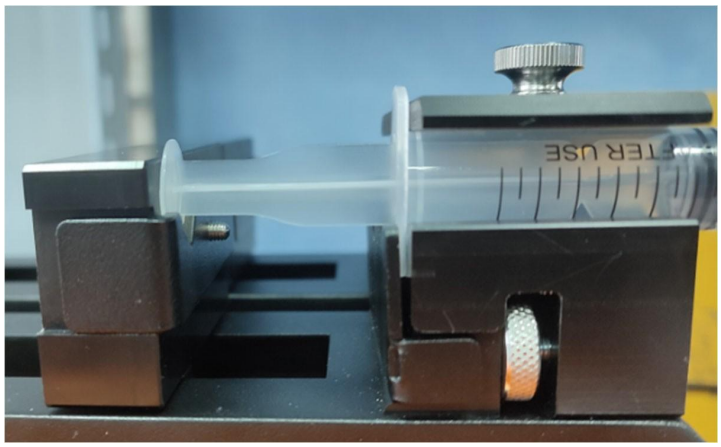
(1) Touch Screen: Used for manual and automatic operation of the equipment, as well as parameter setting and system control.

(2) Drive Slider: Used to secure the rear end of the syringe and to move according to the preset operating parameters.

(3) Syringe Holder: Used to support and position the syringe barrel.

(4) Syringe Clamp Plate: Pull up to allow placement of the syringe.

(5) Locking Nut: Used to secure the syringe flanges (“ears”) in place. The fixing method is shown in the figure.

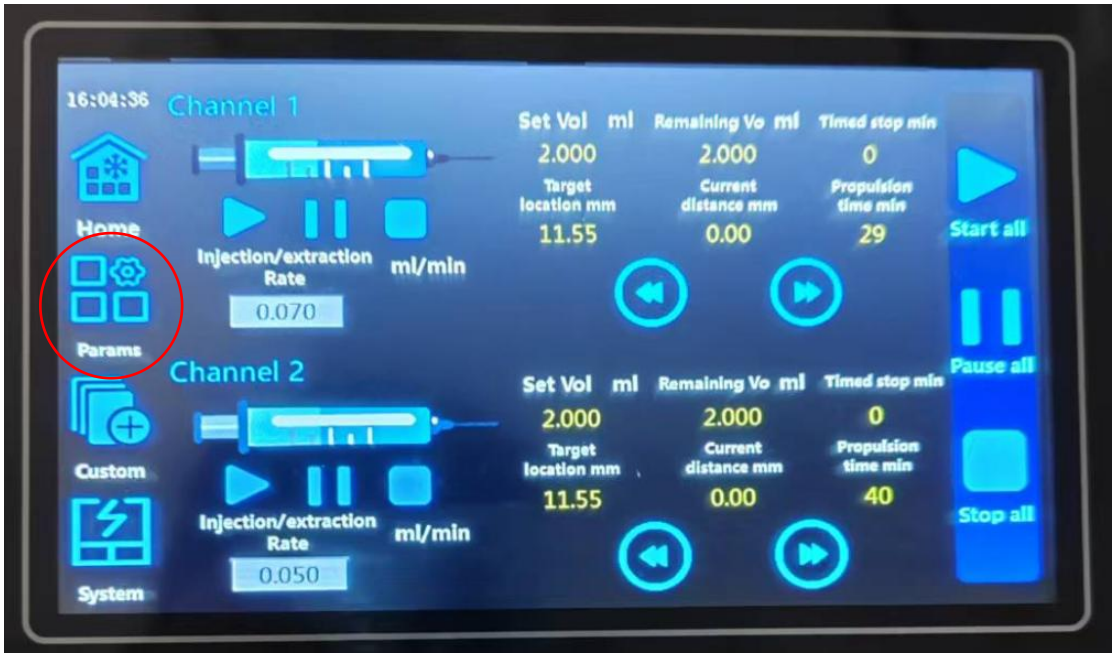


3. Basic Operation

NOTE: To ensure proper operation of the equipment and the personal safety of the operator, please read this user manual carefully before first use.

3.1 Basic Operating Procedure

(1) Connect the power supply and switch on the unit. The touch screen will start and enter the operation interface. At the same time, the yellow indicator light will flash.



(2) Manually tap the Left and Right buttons  to move the syringe pump pusher backward or forward. When installing the syringe for the first time, move the pusher backward to allow syringe installation. After installation, move the pusher forward to expel air from inside the syringe.

(3) Enter the Parameter interface to configure the experimental parameters. Four operating modes are available.

(4) After the operation reaches the target position, the device will stop, and the red indicator light will turn on and remain lit for a period of time. If Pause is pressed during operation, the red indicator light will turn on. Press Start again to resume the operation.

4. Interface Details

4.1 Home Screen

When the system is running, the fluid movement inside the syringe is displayed on the screen:

- A blue moving block indicates injection mode.
- A red moving block indicates withdrawal mode.

The operation buttons display different visual states when idle and when active, allowing the user to easily observe the current operating status. The operating status can also be identified via the LED light strip.

(1) Start Button : Used to start operation for a single module or for both modules simultaneously, or to resume operation from a paused state.

(2) Pause Button : In automatic mode, tap once to pause the operation. The parameters already executed are retained and will not be affected.

(3) Stop Button : Stops the operation and initializes all executed parameters. The injected volume will be reset to zero.

If this button is pressed during operation, the target volume and related parameters must be reconfigured before restarting. Otherwise, there is a risk of mechanical collision and equipment damage.

4.2 Parameter Screen

(1) Parameter Setting (Before Automatic Operation)

Parameters must be configured before starting automatic operation.

Tap Units to switch measurement units:

- Volume can be set to mL or µL
- Speed can be set to mL/min or µL/min

(2) Operating Mode

The operating mode drop-down menu provides four modes:

- Injection
- Withdrawal
- Injection - Withdrawal
- Withdrawal - Injection

Injection indicates pushing fluid out of the syringe, while Withdrawal indicates drawing fluid into the syringe.

(3) Cycle Count

When the cycle count is set to a value greater than 1, the system will automatically restart after the preset delay time in the selected mode. Each completed cycle reduces the remaining cycle count by one. Operation stops automatically once the preset number of cycles is reached.

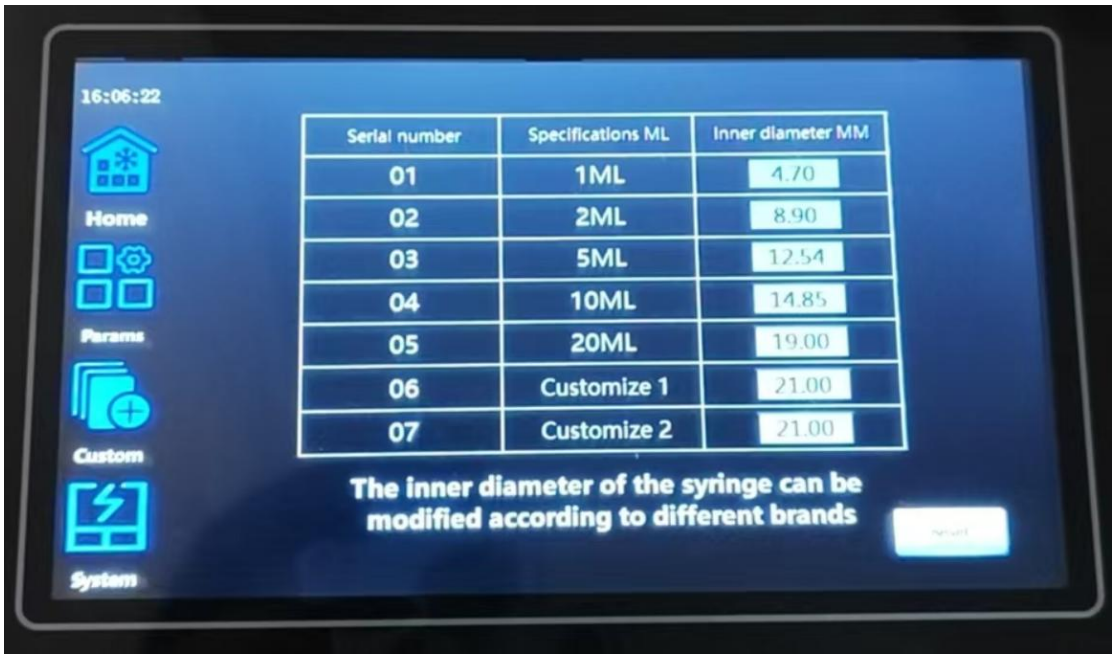
(4) Syringe Manufacturer

Displays the currently selected syringe manufacturer and specification. Tap the button on the right to enter the detailed syringe brand and specification selection screen.

(5) Run Time Seting

For timed operation, the run time can be set. Once the specified time is reached, the motion will pause automatically.

4.3 Specification Selection Screen



(1) Specification Number

Tap the corresponding specification number to select the desired syringe. The selected specification will be highlighted with a blue background, and a “Read Successful” confirmation message will appear.

(2) Indicator Colors

Yellow numbers indicate the currently selected content. Red numbers indicate successfully applied parameter values. Consistency between yellow and red indicates that the parameters have been successfully read and loaded.

4.4 Custom Parameter Setup Screen

This function is used when the syringe cannot be selected from the standard manufacturer library. (StonyLab provides commonly used in-house syringe specifications as a reference.)

- Up to 10 custom parameter sets can be entered.
- Basic syringe specifications, such as inner diameter, can be entered manually or determined through measurement if unknown.
- Proper calibration is required to ensure experimental accuracy.

Calibration Methods

When using custom parameters, calibration may be necessary. Two recommended methods are provided:

(1) Gravimetric Method (for water):

- Draw 1 mL of distilled water and weigh it using a high-precision balance.
- Calibration coefficient = (Measured weight / 1 mL) x 100%

(2) Volumetric Method (for solution):

- Draw 1 mL of solution and fully dispense it into a precise measuring cylinder.
- Calibration coefficient = (Measured volume / 1 mL) x 100%

NOTE: Multiple measurements should be taken and averaged to improve accuracy.

4.5 System Screen

Displays factory information, including the number of times the device has been powered on and its total runtime.

5. Warranty

Warranty is effective from the date of purchase and is non-transferable.
For more details about the warranty, please refer to the link below:
stonylab.com/pages/warranty

For any inquiries or assistance, feel free to contact us:
Company: StonyLab Inc.
Email: support@stonylab.com
Phone: 631-406-6080
Website: https://stonylab.com/

This instruction manual is subject to change without prior notice