Automatic pipetting workstation

SC9100 V03

User Manual

catalogue

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1. Overview

The SC9100-SE pipetting workstation redefines liquid handling and process automation. We have excellent automation design concepts, advanced automation and liquid handling technologies, and provide diverse options for workbench capacity and applications to meet the specific process requirements of the laboratory.

2. Rules and Parameters

Product model	SC9100 V03
Minimum size for static placement	300×260×490mm
Maximum size of motion	430×260×490
Net weight	20. 5kg
Orifice plate specifications	Standard SBS board position
Channel	96 channels
Pipetting range	1-1250ul
Power requirements	85-264VAC,47-63HZ
Precision of pipetting	0.5-10ul pipette core Range: 0.5ul% D: ± 14% CV ⩽ 8% Range: 0.1ul% D: ± 8% CV ⩽ 6% Range: 5ul% D: ± 5% CV ⩽ 2.5% Range: 10ul% D: ± 2% CV ⩽ 1.5% 5-300ul pipette core Range: 50ul% D: ± 1.5% CV ⩽ 1% Range: 100ul% D: ± 1% CV ⩽ 0.8% Range: 200ul% D: ± 0.8% CV ⩽ 0.5% 10-1000ul pipette core Range: 1000ul% D: ± 0.35% CV ⩽ 0.2%
Precision of robotic arm	±0.05mm

3. Appearance and structure

As shown in the figure, the brief structure of SC9100 V03 fully automatic pipetting workstation is as follows

4、Operating principle

The device has three motion axes, namely X-axis tray, lifting Z-axis, and pipetting axis. The X-axis is driven by gears and racks, and the rack under the tray is driven by the gears on the fixed motor to achieve left and right movement of the X-axis. The Z-axis movement is driven by a ball screw motor, and the liquid pipetting axis is driven by a through type ball screw motor

5. Installation and debugging

Contact after-sales personnel for guidance on installation and debugging

6. Preparation before using

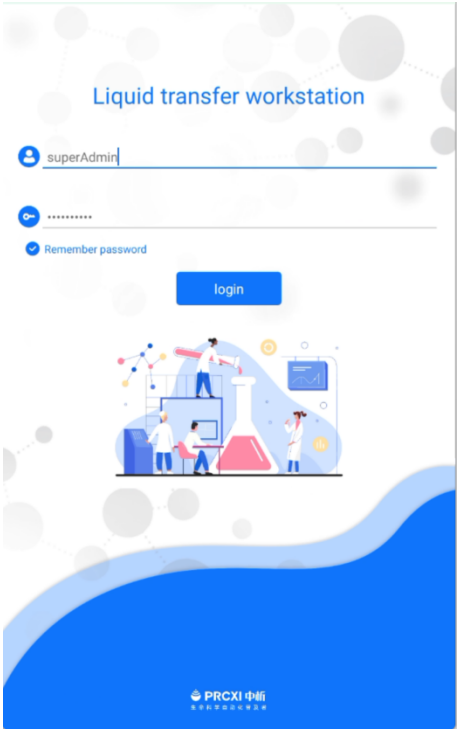
Before using the device, please ensure that the following preparations have been completed:
Check the packaging and confirm that all accessories are complete
Carefully read this user manual to understand the correct usage method
If you have any special requirements, please contact our technical personnel.

7. Introduction to Operating Procedures

7.1. Overall process summary of software routine operations

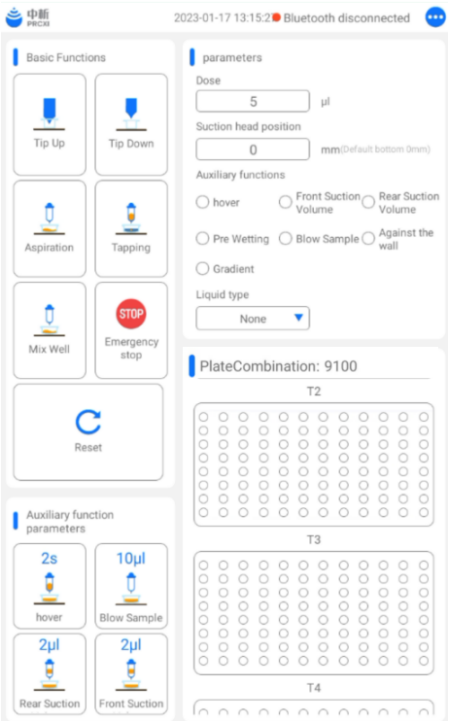
1. Start software to connect devices
2. Log in to the account, and after successful login, you can enter the software operation interface, which defaults to the homepage (manual mode)
3. Click on the three-point style icon in the top right corner to switch pages
4. In manual mode, it is a single step operation, which allows for single step operation (see 7.3 for details)
5. Automatic mode for multi-step scheme editing and operation (see 7.4 for details)
6. Parameter settings can be used for fine-tuning and calibration of device parameters (see 7.5 Parameter Settings for specific operations and functions)

7.2. Login software



Click login to enter the main interface, where you can edit and run the experimental plan

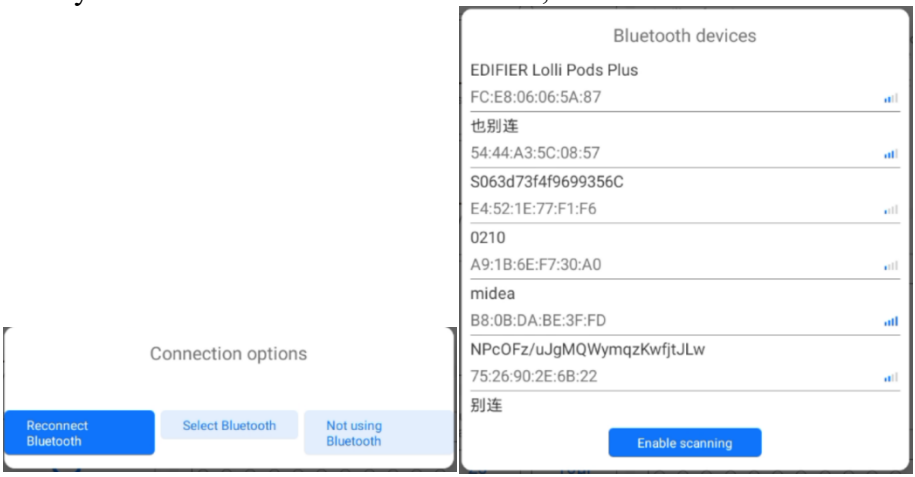
7.3 Manual mode



The main page is in manual mode, which is divided into four modules: basic functions, parameters, auxiliary function parameters, and location. The three-point icon in the upper right corner can be clicked to switch pages. The left side of the icon shows the current link status. When it is marked as "service enabled", it indicates that the server mode of the application has started, and the client can now wait for connection. When it is marked as "connection successful", it indicates that the wired mode of the application has been enabled, and instructions can be directly issued. At the same time, when inserting a cable, you can directly click on the text to connect the device. When the word "Bluetooth enabled" is used, it means that the Bluetooth connection of the application is successful.

Bluetooth mode:

When the connection status in the upper right corner is marked as Bluetooth disconnected, you can click to open a pop-up window for nearby Bluetooth retrieval and connection, as shown below:



When clicking on 'Reconnect Bluetooth' in the image on the left, it can automatically reconnect to the Bluetooth that has already been connected. Clicking on 'Select Bluetooth' will expand the Bluetooth detection pop-up on the right. Click on 'Scan and Retrieve Nearby Bluetooth', and then click on the Bluetooth in the list to connect

Basic functions:

This module is a functional area that includes a total of 7 functions: loading and unloading gun heads, liquid suction, liquid discharge, mixing, emergency stop, and initialization

Tip up:
Click to open the Tip up pop-up window for editing the load tips function, as shown below:

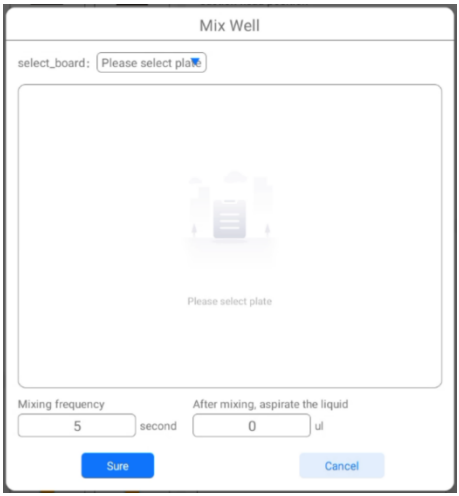
Click on the upper left side to select the version required for the current function. After successful selection, you can choose the wells position. After completion, click confirm to execute the current step

Unloading the tips:
Click to open the position selection pop-up window and select the desired position holes. Then click confirm to control the movement of the settings to that position for unloading the gun head

Liquid aspiration:
Click to open the version hole selection pop-up window, select the sample position that needs to be aspirated, click confirm after selection to execute the function. If you need to customize the aspiration parameters, you can first go to the parameter module to set the aspiration parameters.

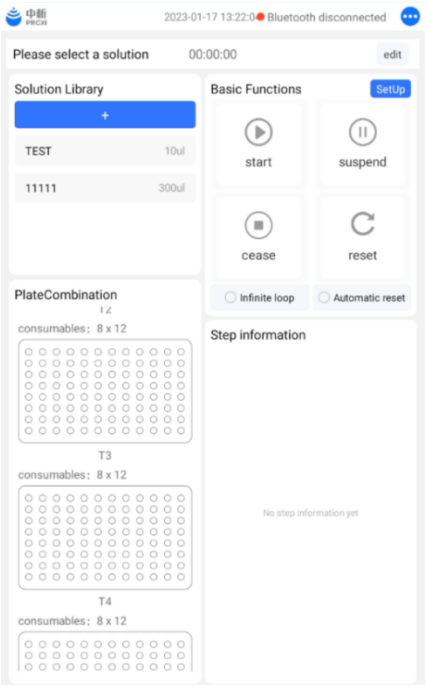
Liquid dispense:
Click to open the position hole selection pop-up window, select the position where the sample needs to be released, and click confirm to execute the function. If you need to customize the liquid release parameters, you can first go to the parameter module to set the liquid suction parameters.

Mix well:
Click to open the Mixing pop-up window for editing the Mixing function, as shown below:



Select the location where the sample needs to be mixed, set the number of mixing times and the amount of liquid absorption after mixing, and click Sure to execute this function.
Emergency stop:
Click to stop the execution of the current functional step
Reset:
Click to reset the device
Parameters:
You can choose to set the parameters for liquid aspiration or dispense. The dosage parameter is the amount of liquid suction or dispense, and the Tip is the reserved position for loading the gun head. The auxiliary function can be selected as a single or multiple option. Click again to deselect the function
Auxiliary function parameters:
Click to modify the parameters of auxiliary functions
Combination of plates:
This module is the display area, and the selected version and hole positions for the functional steps will be displayed here accordingly

7.4 Automatic mode



The automatic mode is responsible for the execution of the scheme process, including displaying, adding, and editing process schemes in the scheme library. Clicking on a scheme in the scheme library allows you to select the edited scheme list (left swipe to delete the scheme). When there is a scheme in the version module, click the edit button in the upper right corner to edit the current scheme. Checking the infinite loop in the basic function allows for continuous execution of the scheme, and checking the automatic reset option automatically resets the device after the process ends.

Basic functions:

Start: Click to start the current solution

Pause: Click to pause the execution of the current plan

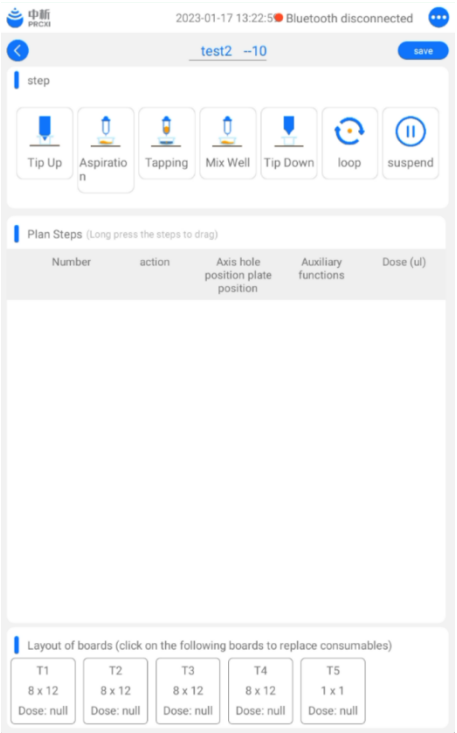
Stop: Click to stop the execution of the current plan

Reset: When in a stopped state, click to reset the device

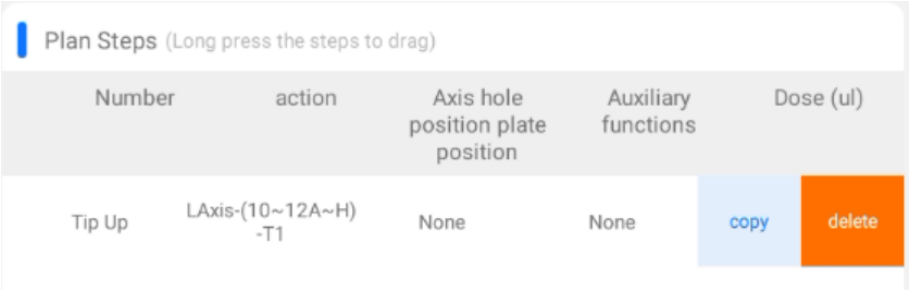
Add scheme:

Click on the scheme library +icon, as shown below

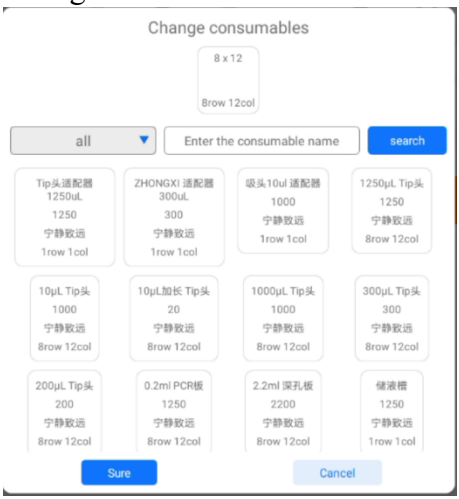
Click on the +icon to pop up a pop-up window for adding a plan. Enter the plan name, select the version and range, and then click "Add" to enter the plan addition page. Tip up, Aspiration, Tapping, Mix well, Tip down, loop, Suspend, and click to add the corresponding steps.



After adding the steps, as shown in the figure below, you can left swipe and drag to copy or delete the step, or drag to sort.

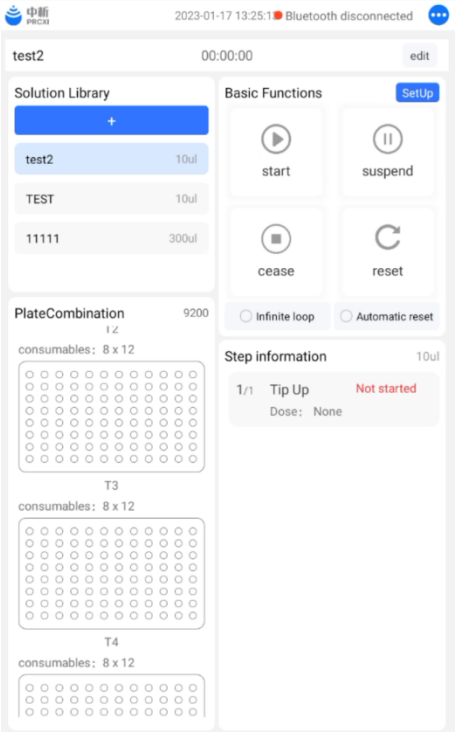


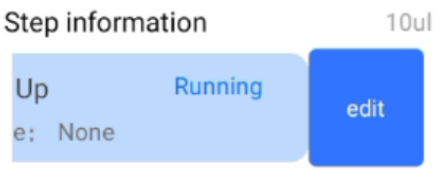
Click on the Change consumables to switch consumables, as shown in the figure:



Hold down the consumables below and drag them to the upper position to add them, then click confirm to proceed

After completing the step editing, click the save button in the upper right corner to save the plan. Click the left back button to return to the scheme execution interface, as shown below:





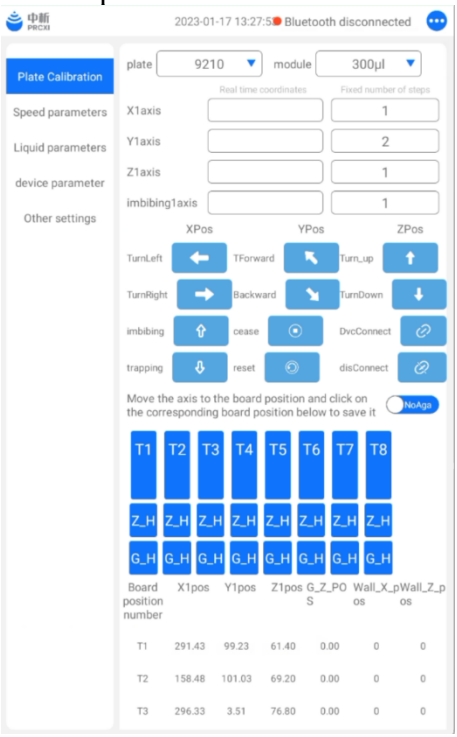
Click on the step information above to step through the step, swipe left to edit

7.5 Parameter Settings

Set various parameters of the device, including plate calibration, speed parameter setting, liquid parameter setting, device parameter setting, and other settings in five modules

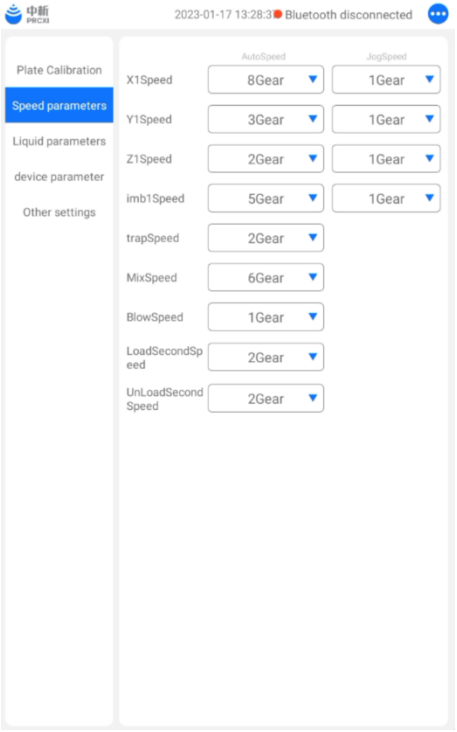
Plate calibration:

Calibrate the position of the plate position by controlling the movement of the xyz axis device to ensure accurate positioning, as shown in the following figure. The right figure shows a single step operation for calibration. Click on the arrow in the corresponding direction, and the real-time position will capture the current position of the equipment axis. Double click on the corresponding plate position below to calibrate the current position



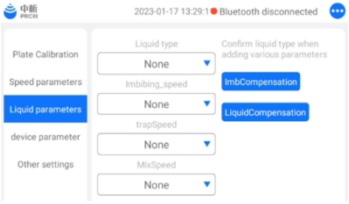
Speed parameters:

Includes automatic speed and jog speed during the execution of the scheme process, with a maximum speed of 10 gears and a minimum speed of 1 gear, as shown in the following figure



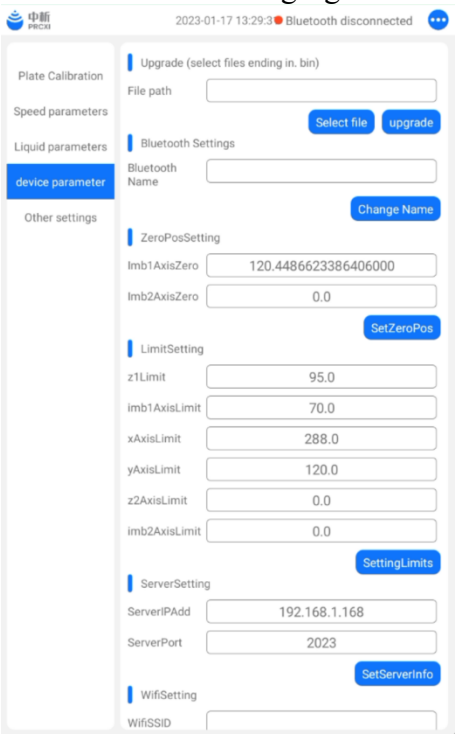
Liquid parameters:

The main purpose is to adjust the aspiration and dispense speeds of different liquids to increase the aspiration compensation parameters and liquid compensation algorithm parameters, as shown in the following figure



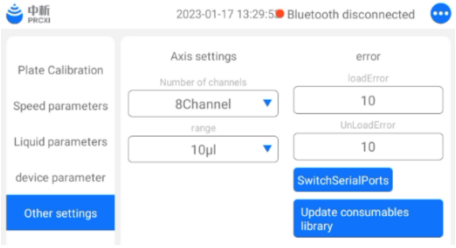
Device parameters:

Used to set parameters such as device axis and connection parameters, as shown in the following figure.



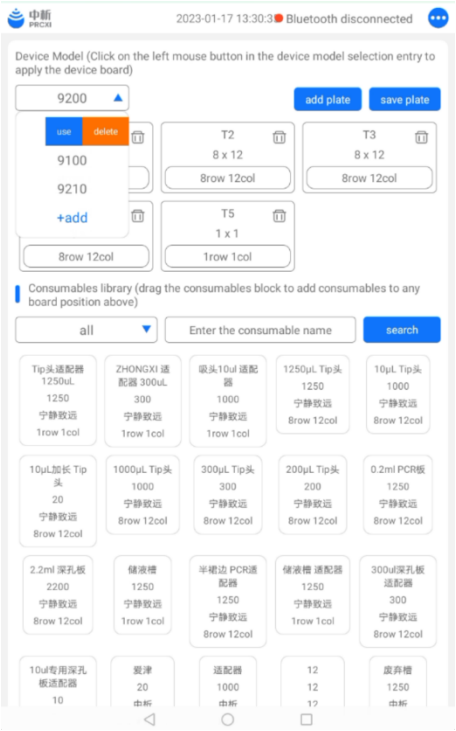
Other settings:

Set the number range, channels and serial port switching for the current device axis.



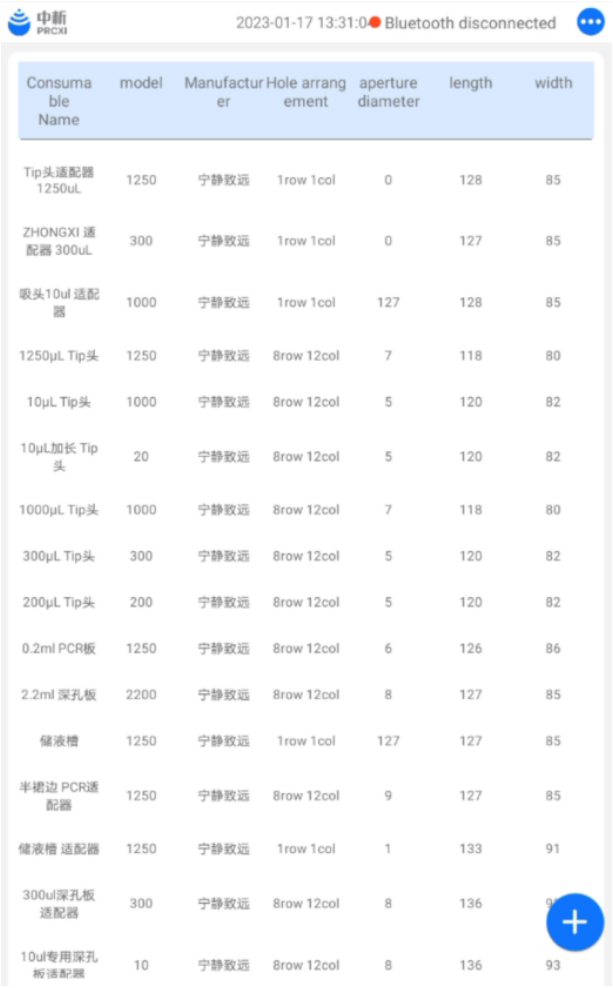
7.6. Bottom plate setting

You can select the device model and version combination below the device model, drag left and click to use, as shown in the following figure Click on 'Add Plate' to add a new position. Drag the consumables from the consumables library below and place them in the upper position to add them to the position. After completion, click 'Save Position' to save combination of plates.



7.7 Consumables Warehouse

Click the +icon to open the consumables addition pop-up window, where you can add consumables. Hold down the consumables and slide left to edit or delete them, or edit the hole position information of the consumables



Consumable Name	model	Manufacturer	Hole arrangement	aperture diameter	length	width
Tip头适配器 1250uL	1250	宁静致远	1row 1col	0	128	85
ZHONGXI 适配器 300uL	300	宁静致远	1row 1col	0	127	85
吸头10ul 适配器	1000	宁静致远	1row 1col	127	128	85
1250μL Tip头	1250	宁静致远	8row 12col	7	118	80
10μL Tip头	1000	宁静致远	8row 12col	5	120	82
10μL加长 Tip头	20	宁静致远	8row 12col	5	120	82
1000μL Tip头	1000	宁静致远	8row 12col	7	118	80
300μL Tip头	300	宁静致远	8row 12col	5	120	82
200μL Tip头	200	宁静致远	8row 12col	5	120	82
0.2ml PCR板	1250	宁静致远	8row 12col	6	126	86
2.2ml 深孔板	2200	宁静致远	8row 12col	8	127	85
储液槽	1250	宁静致远	1row 1col	127	127	85
半裙边 PCR适配器	1250	宁静致远	8row 12col	9	127	85
储液槽 适配器	1250	宁静致远	1row 1col	1	133	91
300ul深孔板适配器	300	宁静致远	8row 12col	8	136	9
10ul专用深孔板适配器	10	宁静致远	8row 12col	8	136	93

7.8. More

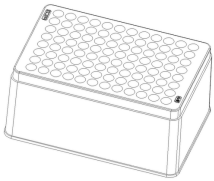
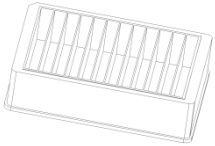
Used to view device and software related information

7.9 Software Notice

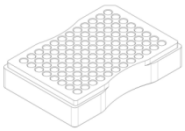
Provide upgrades according to the R&D plan for requirements beyond standard functions and within the upgrade plan.

8. Precautions for using consumables and adapters

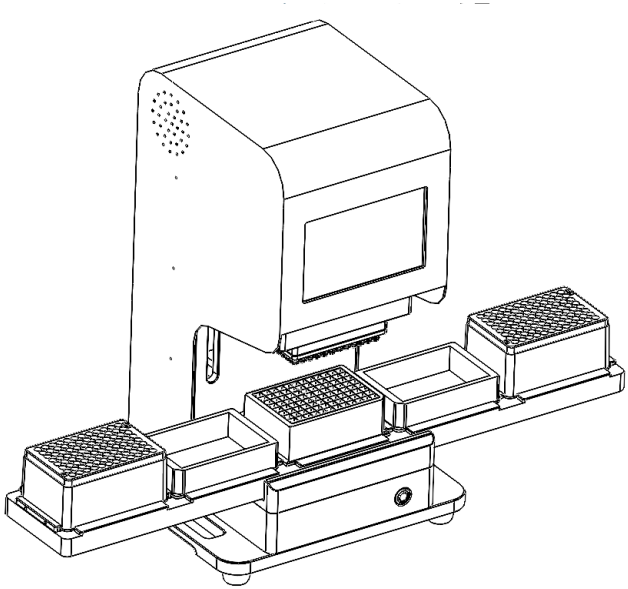
8.1 Common consumables

PRCXI 300ul	
PRCXI 1000ul	
12 liquid storage tanks	
96 deep wells plate	

8.2 Common adapters

Padded Adapter	
96 well PCR plate adapter	

8.3. Instructions for use

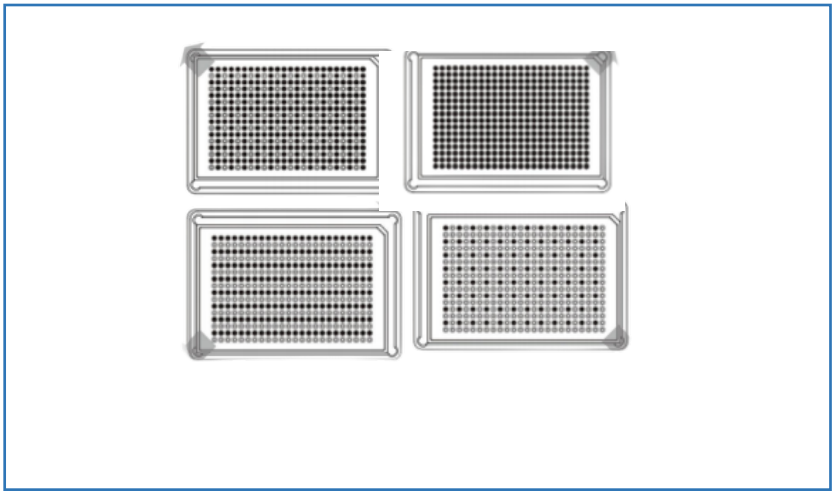


According to the experimental requirements, place the corresponding consumables in the standard SBS plate position. The fit between the consumables and the board position should have no damping sensation, and the flatness of the consumables should not be abnormal. The

clearance around should be moderate, and there should be no significant shaking sensation, which is considered normal. (Detailed information can be found in the instructional video)

8.4 Dispense to 384 plates

Manually push the four corners of the 384 orifice plate in sequence as shown by the arrows below:



9. Note

After use, the equipment shall be shut down, and the power shall be cut off when there is UV disinfection and sterilization function and disinfection and sterilization function
Do not expose the device to high temperature/humidity/vibration environment
Please avoid using non-standard power adapters
When cleaning equipment, please use soft fabrics and do not use chemical solvents

10. Contact details for Support

E-mail: info@piplab.nl
Tel: 085-1306833