

User Manual

Ver. 2.1 2020.03



NB-12-3027-1/ NB-12-3027-2

NeoReal 1000 / 1000+

Real-Time PCR System

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Please read this manual carefully before using this instrument!

Purpose of This Manual This manual provides instructions on how to set up and use the NB-12-3027-1/2 Real-Time PCR System's instrument (the thermal cycler).
We reserve the right to modify this manual at any time without prior notice.

Writing Conventions This manual uses the following conventions:

- **Bold** text indicates user operation.

For example:

Touch **Ok** to accept changes and return to last screen.

- **Note:** Provides instructions that draw your attention or may be helpful.

For example:

Note:

When the instrument is set aside for a long time, disconnect the power cable from the socket.

- **IMPORTANT!** Provides information that must be read carefully. Ignore the information will possibly result in damage to the instrument or to the user.

For example:

IMPORTANT!

Do not touch the surface of the sample block because it may be very hot!

IMPORTANT!

To prevent electric shock, please turn off the power and disconnect the power supply prior to cleaning the outer surface of the instrument.

[Chapter 1] Instrument Overview

1. Instrument Components



Figure 1 Front View of the Instrument



Figure 2 Rear View of the Instrument

Table 1 Function of the Instrument Components

Component	Function
Touch screen	Used to interact with the instrument, create a new experimental program, view and control the experimental run, set the instrument parameters and so on.
USB – A Port	Connect a U disk to export the result data, to export run records or to upgrade the instrument software; connect a USB wireless card (optional) and remote control the instrument through a computer.
Knob	The sample block is opened and closed by pulling / pushing the knob; the hot lid is pressed against the reaction vessel or out of the reaction vessel by rotating the knob. The hot lid prevents the reaction liquid from evaporating and condensing by heating the top of the reaction vessel.
Air Vents	Let air go into and go out of the instrument.
Power Switch	Powers on (1) and powers off (0) the instrument.
Power Inlet	Connects the instrument to a socket via supplied power cable.
Ethernet Port	Network control the instrument by a computer.
USB - B Port	Reserved Port.





2. Touch Screen Buttons

Table 2 and Figure 3 describe buttons and virtual keyboard common to many of the screens.

IMPORTANT!

It is recommended to use a stylus or a fingertip to touch the touch screen. Do not use any sharp object (e. g., a pencil) to touch the touch screen in case of scratching.






Table 2 Buttons in the screens

Button	Function
	Closes current screen without changing any parameters and returns to previous screen.
	Accepts present parameters setting and closes the screen.
	Scrolls left or right to view graph or curve.
	Moves between pages (i. e., Page Up and Page Down).

You can enter letters or numbers by using the virtual keyboard:



Figure 3 Virtual keyboard

To...	Touch...
Enter a letter/number	A letter/number button.
Switch the keyboard, enter capital letters / lowercase letters	 
Switch the keyboard, enter numbers or special symbols	
Switch the keyboard, enter letters	
Delete the last character in an input field	

[Chapter 2] Getting Started

1. Install the Instrument

1.1 Site Requirements

The instrument is intended for indoor use. Ensure that the installation site meets conditions below.

Power supply The instrument requires 85-265V, 50-60Hz and grounded outlet. The power cable supplied is rated to carry 10A at 125V or 250V. Please always use the power cable supplied with the instrument.

Environmental Conditions

Table 1 Temperature and humidity conditions:

Condition	Acceptable range
Ambient temperature	10 to 30°C (50 to 86°F)
Relative humidity	20 to 80%, non-condensing

Place the instrument on a stable table or bench. Avoid placing the instrument adjacent to heaters, cooling instruments, water sink or in direct sunlight. Keep away from any equipment that vibrates, such as a shaker or a centrifuge. The recommended distance between the instrument and the back wall is 20 cm (7.9 in). When more than one instrument is used at the same time, the distance between two instruments should not be less than 30cm (11.85 in).

1.2 Unpack

1. Remove the packaging materials and store them in case of transport use.
2. Inspect the instrument for shipping damage.
3. Included in the box should be:
 - The NB-12-3027-1/2 Real-Time PCR instrument
 - Power cable
 - Warranty card

IMPORTANT! If the instrument is damaged or some items are missing or damaged, contact our company or local distributor.

1.3 Power On and Power Off

1. Connect the power cable to the power inlet in the rear of the instrument.
2. Connect the power plug to the socket.
3. To power on: Turn the power switch to position '1'.
To power off: Turn the power switch to position '0'.

Note: When the Instrument is not used for extended periods of time, disconnect the power cable from the socket.

1.4 Open and Close Sample Block

The instrument uses a unique drawer model structural design to open and close the sample block, to facilitate the user to place and remove the reaction vessel.

When the sample block is closed, turn the knob clockwise to lock the door of the block, and the sample block will raise the height until the lid is pressed against the reaction vessel to reduce the evaporation of the reaction solution.

IMPORTANT!

Temperature of the block can be very high (100°C/212°F). Never touch the surface of the block.

Open / close the block:

1. Turn the knob counterclockwise, unlock the door lock, so that the height of the sample block down away from the hot lid.
2. When the knob is rotated to the limit position, grasp the knob and gently pull the sample block forward;
3. Place the reaction vessel (sample tubes) in the hole (sample well) of the sample block;
4. Gently push the door of the sample block, turn the knob clockwise until the knob is in the horizontal position and you will hear a "click" sound. The door has been locked and hot lid will press the reaction vessel with an appropriate pressure.



1



2



3

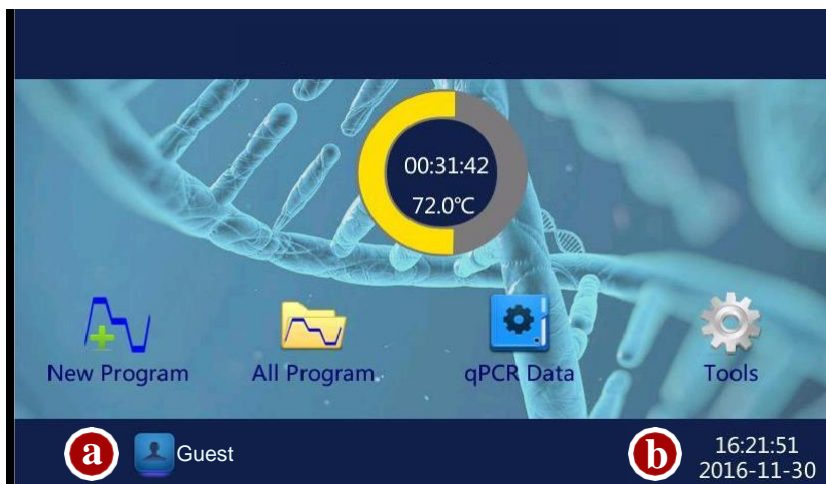


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2. Introduce the Home Screen


When the instrument powers on, the boot screen is displayed for a while. The Home screen is displayed then (see below).



Items in the Home screen:

- a. Shows login user name.
- b. Shows date and time.

Buttons of Home Screen

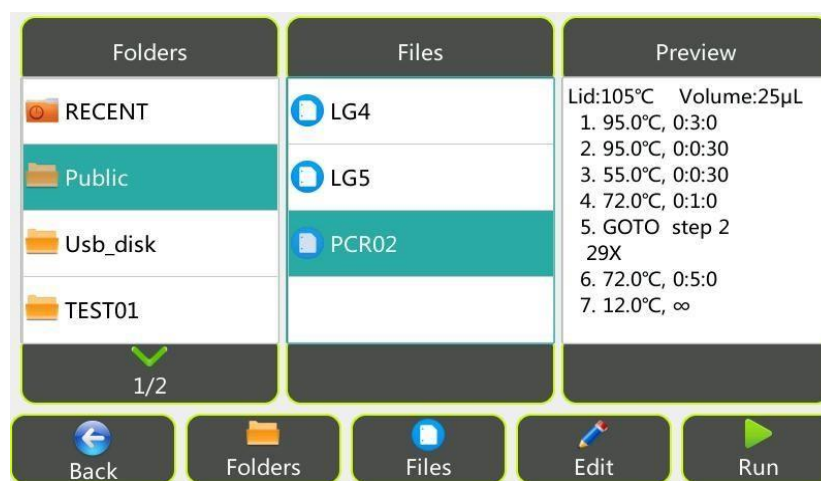
Button	Function
New Program	Creates new programs (without fluorescence collection steps).
All Program	Open and view all saved programs.
qPCR Data	View and export qPCR experiment data.
Tools	Sets instrument parameters and uses other tools.
The ring in the center of the screen	Displays the current running status (idle or remaining time) and sample temperature. Touch it to open Run Status screen.
 Login	Switch another user and login system.

[Chapter 3] Manage Folder and Program

1. Introduce the All Program Screen

In the Home screen, touch **All Program**.

The All Program screen opens.



The screen has three columns. The first column lists all available folders. Touch Page Up and Page Down to move between pages. The following folders are system folders:

- **RECENT**: shows the recently run 20 programs for quickly viewed and run again.
- **Public**: used as the default folder for saving programs. All login users can use programs saved in the Public folder.
- **Usb_disk**: This folder contains program files that stored in the U disk. Program files can be copied to and from the U disk.

Note: System folders are not allowed renamed or deleted.

The second column shows all files of a selected folder. Touch a file to view program steps in the Preview column.

Buttons of All Program Screen

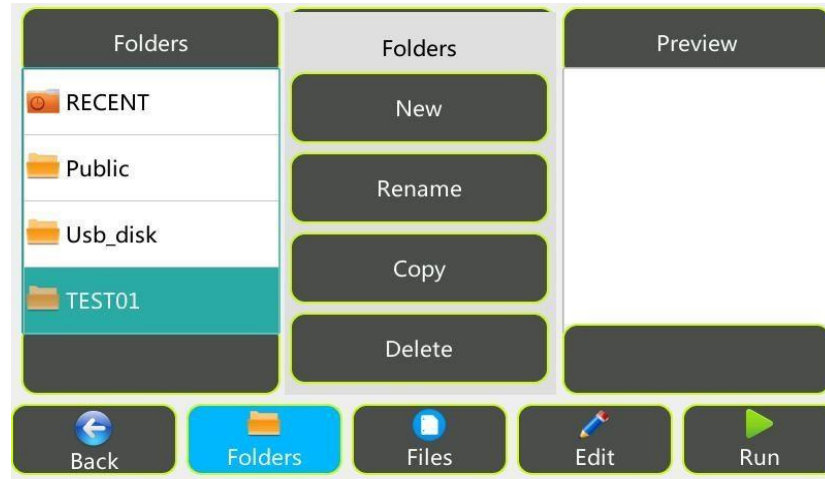
Button	Function
Back	Returns to the Home screen.
Folders	Creates a new folder, renames or deletes a selected folder, copies all programs in one folder to another folder.
Files	Copy a program file, renames or deletes a selected program file, create a new program.
Edit	Edits a selected program.
Run	Runs a selected program.

2. Manage Folder and Program

2.1 Add Folder

To add a folder:

1. In the All Program screen, touch **Folders**, and then touch **New**.



2. Enter a folder name up to 12 characters and touch **Ok**.

2.2 Rename Folder/Program

To rename a folder or program file:

1. In the All Program screen, select the folder or program file.
2. Touch **Folders** > **Rename** to rename a folder or touch **Files** > **Rename** to rename a program file, and then touch **Ok** to accept changes.

2.3 Delete Folder/Program

To delete a folder or program file:

1. In the All Program screen, select the folder or program file.
2. Touch **Folders** > **Delete** to delete a folder or touch **Files** > **Delete** to delete a program file. Touch **Yes** in the displayed pop-up window to confirm.

2.4 Copy Folder

To copy all programs of Folder A to Folder B:

1. In the All Program screen, select the folder A to be copied.
2. Touch **Folders** > **Copy** to open the Copy Folder keyboard.
3. In the Copy Program keyboard, enter the target Folder's name "B", and then touch **Ok** to copy all program to Folder B.

If:

- a. Folder B does exist, the folder will be created firstly, and then all programs will be copied to Folder B.
- b. Folder B exists, all program will be copied to Folder B, but some program which has the same name as that of Folder B's will not be copied.
- c. To copy all programs to a U disk, insert the U disk in the USB-A port of the

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Thermal Cycler. In the Copy Program keyboard, enter the target Folder's name "Usb_disk" (case-sensitive), and then touch **Ok**.

2.5 Copy Program

To copy a program file:

1. In the All Program screen, select a program file to be copied and then touch **Files > Copy** to open the Copy Program keyboard.
2. In the Copy Program keyboard, select a Folder in the drop-down list box, and then touch **Ok** to copy the program file.

If you want to:

- a. Rename the program before copy - clear the old program name, and then enter a new name.
- b. Create a new target folder to copy the program to - Touch **New Folder** icon to open the New Folder keyboard, enter a folder name, and then touch **Ok**.
- c. Insert the U disk in the USB-A port of the Thermal Cycler. Select Usb_disk in the Folder drop-down list box to export the program file to the U disk.

2.6 New Program

For creating a new program, please see [chapter 4](#) for details.

2.7 Run Program

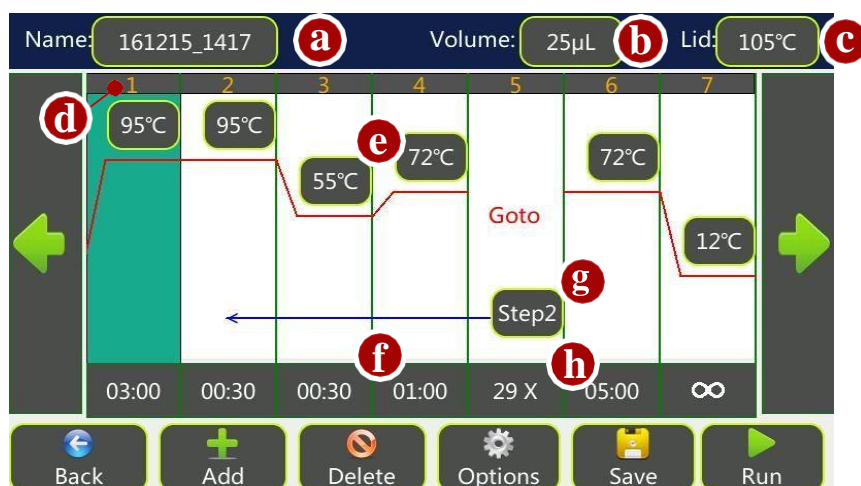
For running a program, please see [chapter 5](#) for details.

[Chapter 4] Create and Edit Program

1. Create New Program

1.1 Introduce the Edit Program Screen

1. In the Home screen, touch **New Program** to open the Edit Program screen.



Items in the Edit Program screen:

- a: Program name
- b: Sample volume
- c: Lid temperature
- d: Step number
- e: Temperature for a constant temperature step or a gradient temperature step
- f: Step holding time (hour: min: sec)
- g & h: The start step number and amounts of additional repeats for cycles

Buttons of Edit Program Screen

Button	Function
Back	Returns to the Home screen or the All Program screen.
Add	Adds a constant temperature step, a gradient temperature step or a goto step.
Delete	Deletes a step.
Options	Set additional parameters for a selected step.
Save	Saves the program.
Run	Run the program.

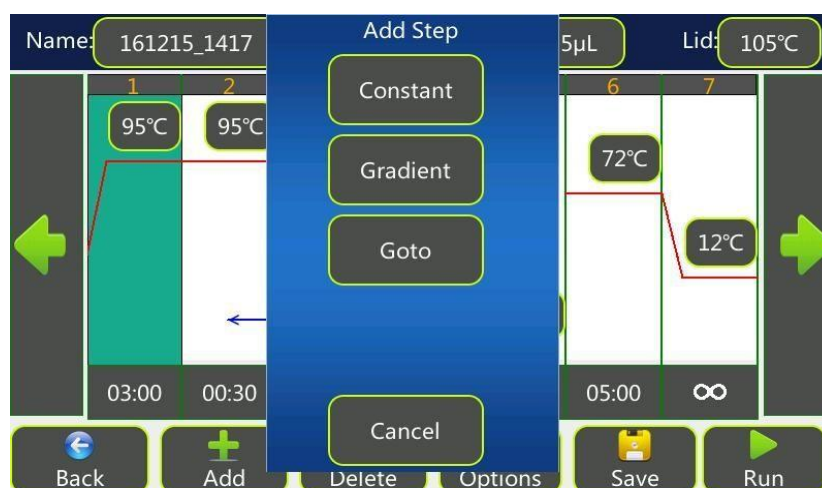
1.2 Add Steps

A PCR program comprises several steps. Step types include Constant, Gradient and Goto steps. Each new step will be inserted after the selected step while the initial step will be inserted without selecting a step. The maximum amount of steps for a program is 30.

1. In the Edit Program screen, touch anywhere in the column for a step to select it.

When the step is selected, the background becomes blue.

2. Touch **Add** and the Add Step window opens.



3. Touch **Constant** to add a constant temperature step or touch **Gradient** to add a gradient temperature step or touch **Goto** to add a goto step.

1.3 Changing Temperature and Hold Time in a Constant Step

1. In the Edit Program screen, touch temperature box or hold time box of a step.

2. Enter a value in the pop-up keyboard and then touch **Ok**.



Note:

The allowable temperature range is from 0°C to 105°C, with 0.1°C interval.

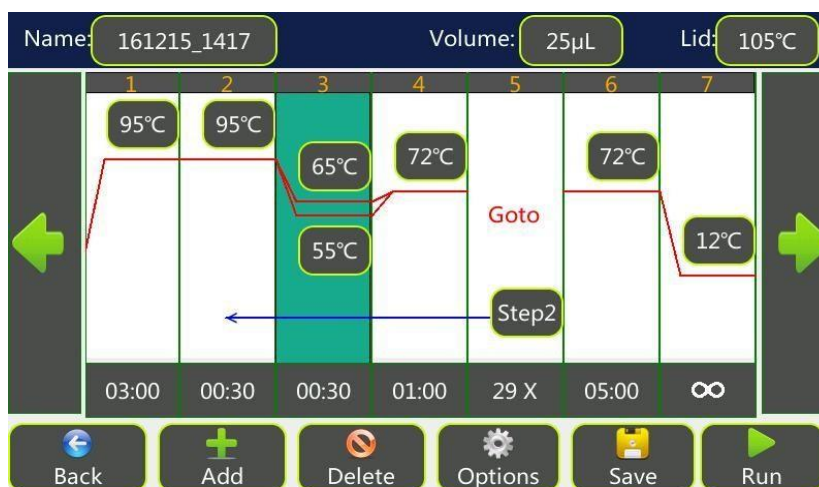
The allowable Hold time range is from 0:00:00 to 9:99:99 hour: min: sec.

Touching ∞ (**Forever**) in the keyboard will cause the program to hold indefinitely after reaching this step until it stopped manually.

1.4 Changing Temperature and Hold Time in a Gradient Step

To change temperature value:

1. In the Edit Program screen, touch up or down temperature box to open the Gradient Temperature Edit window.



2. Touch **Left** and **Right** to enter temperature of the left and right column of sample block. The right part of the window will display calculated temperature gradient from the left column to the right column (from the 1st to 8th for the 48 wells sample block module).

The allowable gradient temperature range:

Left: 30°C ~ 99°C;

Right: 31°C ~ 100°C;

Difference between the Left and Right: 1°C ~ 24°C.



To change hold time:

1. Touch hold time box.
2. Enter a value in the pop-up keyboard and then touch **Ok**.

1.5 dTemp, dTemp, Ramp Rate and Pause

To add dTemp, dTemp, Ramp Rate and Pause to a constant temperature step:

1. In the Edit Program screen, selects a step. Touch **Options** to open the Step Options window.

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2. To edit an item, click on the appropriate text box.
3. Enter a value in the pop-up keyboard and then touch **Ok**.
4. Touch **Ok** to accept changes and close the window.

- **dTemp**: adds temperature increments to step with each cycle.

Touch +/- in the keyboard to shift between “+” and “-” (to increase or decrease temperature for each cycle), and then enter the number of degrees of increment temperature. The allowable increment temperature range is 0.1°C ~ 10.0°C.

Note: Parameters cannot be set that would cause a step to fall outside of the operating range of the instrument (i.e. below 0°C or above 105°C).

- **dTime**: adds time increments to the holding time within the step for each cycle. Touch +/- in the keyboard to shift between “+” and “-” (to increase or decrease time for each cycle), and then enter the seconds. The allowable increment time range is 1 sec ~ 600 sec.

Note: Parameters cannot be set that would cause the dwell time to fall below zero.

- **Ramp Rate**: Adjust the heating or cooling ramp rate.

To set the Ramp Rate function:

Enter the value of ramp rate in the keyboard. Input range is 0.1 ~ 4.0°C/sec.

Note: The actual maximum ramp rate of heating/cooling varies with block module type. Refer to the instrument specifications for the value. If a value larger than the block’s maximum rate is entered, the block’s maximum rate will be used. If you do not want to slow the running, just leave this option empty.

- If you touch **Pause**, the program will automatically pause as soon as the desired step temperature is reached and the instrument will beep twice. Touch **Resume**

in the Run Status screen will continue the program running. Pause can be used to add reagents (i.e. A manual hot start method) or when adding or removing tubes every few cycles.

Note: You can also add Pause or dTime as you need to a gradient temperature step.

To remove the dTemp, dTemp, Ramp Rate and Pause,

1.1 In the Step Options window, click on the dTemp, dTemp or Ramp Rate text box.

Delete the old value in the pop-up keyboard or enter "0" and then touch **Ok**.

1.2 Uncheck the **Pause** check box.

1.6 Exchange between Constant Step and Gradient Step

To change a constant step to a gradient step:

1. In the Edit Program screen, selects a constant temperature step. Touch **Options** to open the Step Options window.

2. Click the **Gradient** check box to enable the gradient function.

The right part of the window will display calculated temperature gradient from the left column to the right column (from the 1st to 8th for the 48 wells sample block module). Change the **Left** and **Right** temperature as you need.



To change a gradient step to a constant step:

1. In the Edit Program screen, selects a gradient temperature step. Touch **Options** to open the Step Options window.

2. Uncheck the **Gradient** check box.

3. Change the temperature as you need.

4. Touch **Ok** to accept changes and close the window.

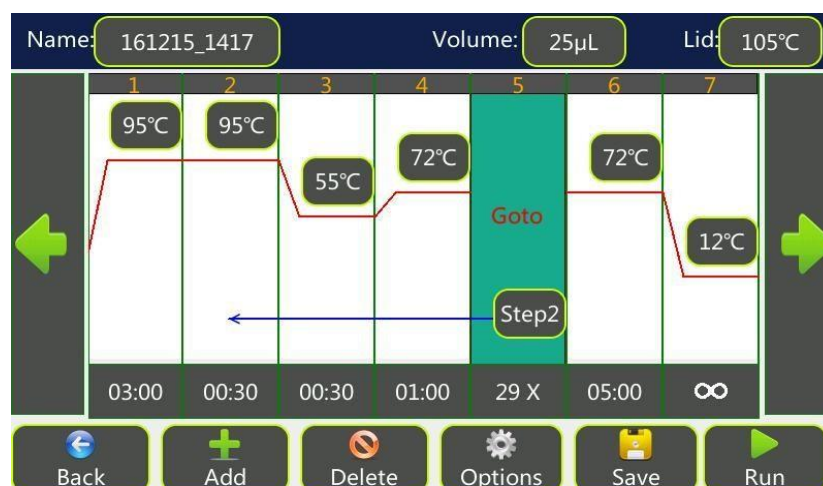
1.7 Set Cycle

1. In the Edit Program screen, select a goto step.

2. Touch **Step** box, select the start step number of the cycle in the pop-up box and touch **Ok**.

The steps between the last step and the start step will run repeatedly for the

Specified cycle number



3. Touch **X** box, enter additional cycle numbers (1-99) in the pop-up keyboard and then touch **Ok**.

Note: The actual cycle numbers will be 'N+1' where N is the entered cycle numbers. For a PCR reaction with 30 cycles, you should enter a number of 29.

1.8 Sample Volume and Lid Temperature

1. In the Edit Program screen, touch **Volume** or **Lid** text box.
2. Enter new value in the pop-up keyboard and then touch **Ok**.

Temperature control mode:

Sim-tube mode: This mode will control the sample temperature to reach the target temperature as fast as possible with sample not overheat.

Block mode: This mode will control the block temperature to reach the target temperature as fast as possible with block not overheat.

Note:

- Sim-tube mode is the preferred control method, especially when steps hold time is 30 seconds or less. It is important to input the correct sample volume for the most accurate result.
- When a sample volume between 1 and 100µl is entered, the Sim-tube mode will be used. When a sample volume of 0µl is entered, the Block mode will be used.

Note:

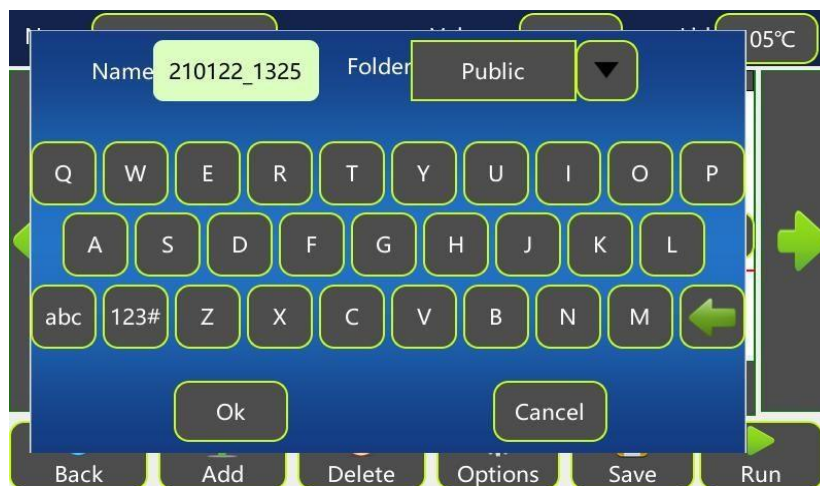
- For lid temperature control, it is recommend to select a temperature five to ten Celsius degrees above the highest temperature of the program steps (e. g., the pre-denaturation step) to protect sample from evaporation and condensation.
- Setting a lid temperature to below room temperature will cause the program never to start running

1.9 Delete Step

1. In the Edit Program screen, touch a step to select it.
2. Touch **Delete** to delete this step.

1.10 Save Program

1. In the Edit Program screen, touch **Save** to display the Save Program screen.

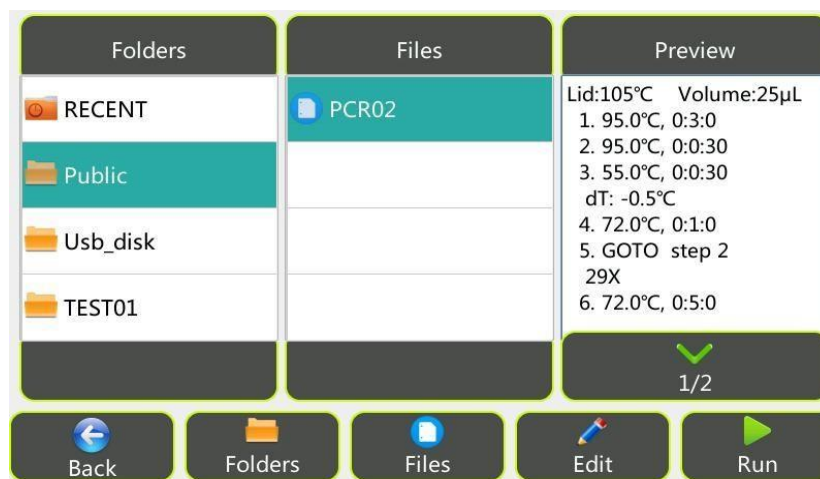


2. Enter a new name up to 12 characters.
3. From the Folder drop-down list box, select a folder to save the program to.
 - Insert the U disk in the USB-A port of the Thermal Cycler. Select **Usb_disk** in the Folder drop-down list box to export the program file to a U disk.
4. Touch **Ok** to save the program.

2. Edit Saved Program

To edit a saved program:

1. In the Home screen, touch **All Program**.



2. In the All Program screen, select a folder and then select a program and touch **Edit**.
3. In the Edit Program screen, you can edit the program and then save and / or run it following the instructions described above.

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[Chapter 5] Perform Run

1. Load Samples

1. Open the sample block. Place 8-tube strips in the sample wells of the sample block.

IMPORTANT!

- **Do not touch the surface of the sample block to avoid hurt because it may be very hot (100°C/212°F)!**
- **The sample block of this instrument can only use 0.1ml PCR tubes, 0.1ml 8-tube strips or 0.1ml 48-well PCR plate (no skirt/half-skirt). CANNOT use 0.2ml ordinary PCR tubes, 0.2ml 8-tube strips or 0.2ml 48-well PCR plate!**

Note:

- The reaction vessels should be sealed tightly with optical flat caps to prevent sample evaporation. Do not use adhesive PCR plate films or foils to seal the vessels!
 - To achieve consistent PCR results, use uniform, thin-walled vessels designed for qPCR. The vessels should have heat resistance of up to about 120°C.
 - The sample wells of the sample block should keep clean.
2. Close the block.

2. Select Program to Run

To run an ordinary PCR program,

- From the Home screen, touch **New Program**, create a new program and then touch **Run**.
- Select a RECENT run program from the All Program screen and touch **Run**.
- Select a saved program from the All Program screen and then touch **Run**.
- Select a saved program from the All Program screen, touch **Edit**, change step parameters, and then touch **Run**.

To run a Real-Time PCR program,

- Open the qPCR Design and Analysis Software on the computer, edit the experiment's properties, protocol and plate information, save it to the root directory of a U disk (file suffix should be *.txc), insert the U disk into the front USB port of the instrument, touch **All Program** on the instrument Home screen, then select **Usb_disk** folder, browse the saved program, copy the program to the instrument's own folder and touch **Run**.
- Ensure that the computer and the instrument are connected to the same LAN, open the qPCR Design and Analysis Software, edit the experiment's properties, protocol and plate information, switch to the software's Run page, touch **Run**.

For details on how to connect the computer and the instrument, as well as editing and running the program using the qPCR Design and Analysis Software, see “Optimal qPCR Design and Analysis Software Installation and Operation Manual”.

1. After you touch **Run** on the instrument, the Run Setting window opens.



2. In the Run Setting window, check the sample volume and lid temperature before run.

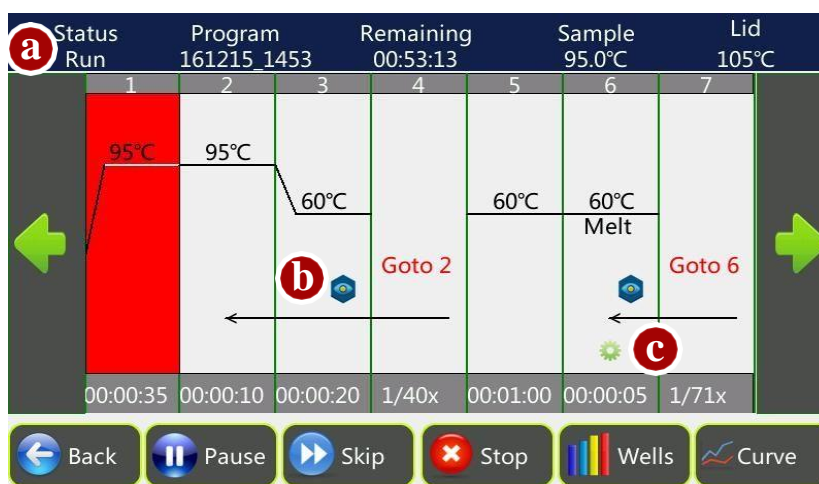
3. Touch **Ok** to begin the run. The Run Status screen opens.

3. View Run Status and Control Run

3.1 View Run Status

Introduce the Run Status Screen

You can view the status of running using the Run Status screen below.



The items displayed on the Run Status screen:

a: Status: the current status, including: Lid heat, Run, Pause, Idle;

Program: the program name;

Remaining: the estimated remaining time;

Sample: the sample temperature;

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Lid: the lid temperature;

- b: Fluorescence Acquisition Icon: Indicates that this step will acquire fluorescence.
- c: Options Icon: Touch this icon to show options for a step, including dTemp, dTime, Ramp Rate, Pause.

Buttons on the Run Status screen:

Button	Function
Pause/Resume	Pauses and Resumes run.
Skip	Skips one step and runs the next step.
Stop	Stops run.
Wells	Views bar chart of sample wells temperature.
Curve	Views real-time fluorescence curve.

View Bar Chart of Sample Wells Temperature

1. In the Run Status screen, touch **Wells** to view the temperature of each column of sample wells in real-time.

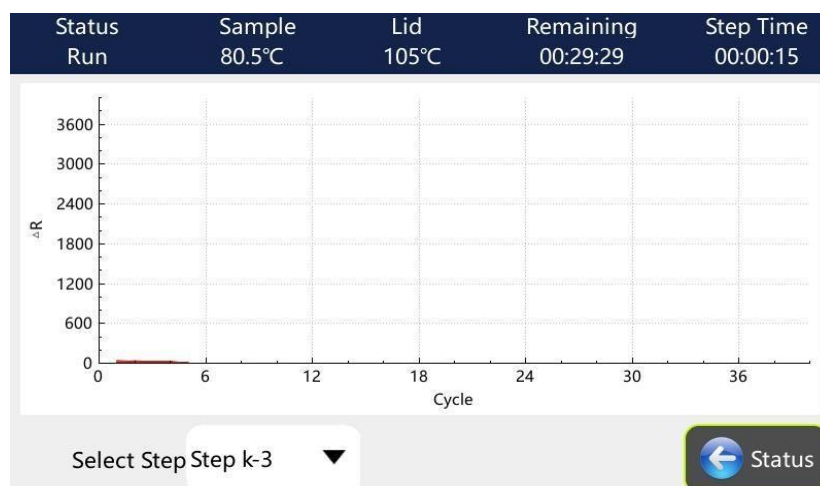


Step Time: the countdown holding time of the current step after the step temperature reached the setting value.

2. Touch **Status** to return to the Run Status screen.

View fluorescence Curve

1. When the program has a fluorescence acquisition step, in the Run Status screen, touch **Curve** to view the fluorescence signal curve in real time. During the measurement, the coordinate axis of the curve is automatically adjusted as the measurement data changes.



The user can select the step number from the "Select Step" drop-down list to view the fluorescence curve for that step.

2. Touch **Status** to return to the Run Status screen.

3.2 Control Run

Pause Run

In the Run Status screen, touch **Pause** and the run will pause and beep twice.

Note:

The temperature will continue increase or decrease until it reaches the setting temperature of a step.

After paused, the Pause button changes to Resume button and you must touch **Resume** to continue the program.

Skip Run Step

In the Run Status screen, touch **Skip** to skip running step and run the next step.

Stop Run

In the Run Status screen, touch **Stop**, a confirmation window will prompt to ask you whether you really want to stop, touch **Yes** will stop run.

3.3 Save Data If the program has a fluorescence acquisition step, the software will automatically save the data after collecting the fluorescence signal in the "qPCR Data" screen.

3.4 Export Data Touch **qPCR Data** on the Home screen, open the qPCR Data screen. This screen lists the data for the automatically saved qPCR experiments. The data of the most recently run experiments are listed first, and the data of the currently running experiment is not displayed in the list until the run is stopped.

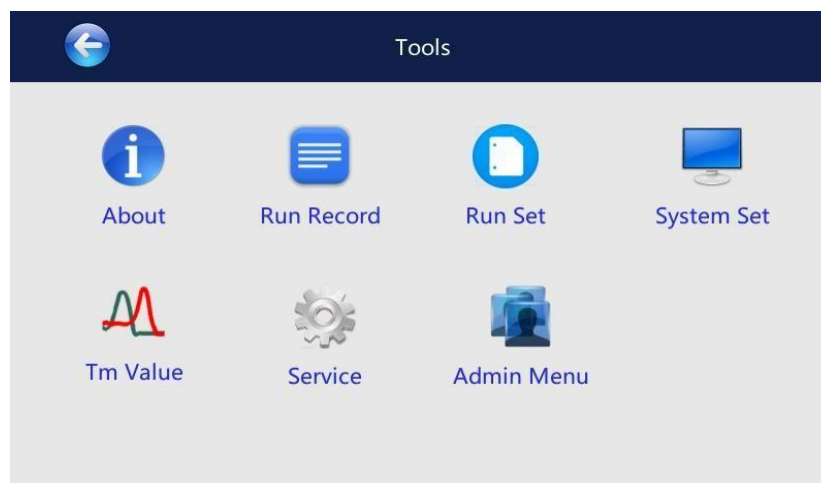
Insert a U disk into the USB port on the front of the instrument, click **Export**, export the experimental data to the root directory of the U disk (the file suffix is *.zsj), the file can be opened with the Optimal qPCR Design and Analysis Software on the computer.

[Chapter 6] Tools

1. Introduce the Tools Screen

In the Home screen, touch **Tools**.

The Tools screen opens.




Buttons of Tools Screen

Button	Function
About	Views product information about the instrument.
Run Record	Views stored run records.
Run Set	Configures parameters for run.
System Set	Sets instrument's system parameters.
Tm Value	Calculates the Tm values and Ta value of a pair of primers.
Service	This function is reserved for service.
User PIN	When a user other than "Admin" and "Guest" login, the Admin Options icon will change to User PIN's icon. The user can edit his (her) login password using this function.
Admin Menu	When "Admin" login, the Admin Menu's icon appears. Use this function to manage users, reset to factory settings, set cyclor name, configure network connection, view the fluorescence signal of each well, calibrate the background and dye and upgrade software.

2. About

To view product information about the Thermal Cyclor:

1. In the Home screen, touch **Tools**.
2. In the Tools screen, touch **About** and the About screen appears.
3. When you finish, touch  to return to the Tools screen.

3. Run Record

1. In the Tools screen, touch **Run Record** to open the screen:

PCR02_16199086 16/12/15 14:25:22	161213_1031_15849088 16/12/13 11:09:05
161213_1031_16815222 16/12/13 10:38:47	161212_1547_19684778 16/12/12 16:14:11
161204_1703_14025921 16/12/04 18:26:44	161202_1353_16845230 16/12/04 16:02:38
161202_1353_90436865 16/12/04 13:23:40	161202_1353_10482472 16/12/02 15:44:37
161202_1116_39893458 16/12/02 13:28:09	161202_1116_21064260 16/12/02 11:23:05

2. Select a record and **double click** it or touch **View** to open the View Record screen.

3. After you finished, touch to return to the Run Record screen.

4. In the Run Record screen, you can touch **Clear** to clear all records, touch **Delete** to delete a selected record or touch the **USB** icon to export a selected record to a U disk.

5. After you finish, touch to return to the Tools screen.

4. Run Set

This function is used to set parameters for run.

1. In the Tools screen, touch **Run Set** to open the screen:

Run Set	
Lid idle temperature: <input type="checkbox"/> 105 °C	Block idle temperature: <input type="checkbox"/> 30 °C
Lid temp. when running: 105 °C	Default sample volume: 25 µL
If step temperature <= 20 °C Lid Auto Shut Off.	

- Enter a 'Lid idle temperature' to let the lid heating to the desired temperature when instrument is idle. Select the check box at left will enable this function.

- Enter a 'Block idle temperature' to let the block heating or cooling to the desired temperature when instrument is idle. Select the check box at left will enable this function.

For example, you can keep the block temperature below 20°C so that when a program starts run, the block temperature will maintain below 20°C during preheating of the hot lid. Because the sample temperature does not increase, so the activity of DNA polymerase is inhibited, the likelihood of nonspecific primer binding and the yield of unwanted products such as primer-dimers are decreased.

- Enter a ‘Lid temp. when running’ to preheat hot lid to a desired temperature before running a program. We recommend you select a temperature five to ten Celsius above the highest temperature of the program steps (e. g., the denaturation step) to protect sample from evaporation and condensation. If you select ‘Off’ on keyboard, the lid heating function will be disable when a program is running.
 - Enter most frequently used sample volume value in the ‘Default sample volume’ box.
 - Enter ‘If step temperature $\leq X^{\circ}\text{C}$, Lid Auto Shut Off’ to automatically turn off the lid heating function when block temperature below an X value. The default value is 20°C.
2. Touch \checkmark (**Save**) to accept changes.

5. System Set

The System Set is used to set system parameters: Date/Time.

To use System Set functions:

1. In the Tools screen, touch **System Set** to open the screen:



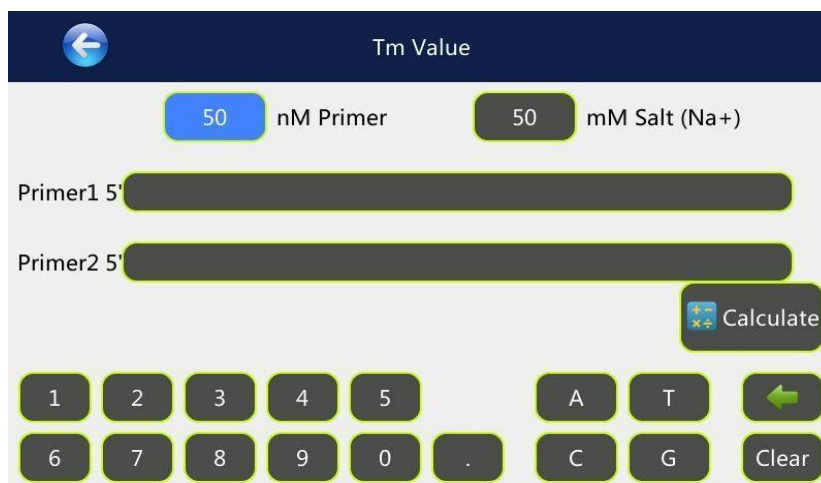
The screenshot shows the 'System Set' screen with a dark blue header containing a back arrow on the left and a green checkmark on the right. Below the header, the text 'Date/Time' is displayed. Underneath, there are input fields for date and time: '2021' for the year, '01' for the month, '22' for the day, '10' for the hour, and '21' for the minutes. Each input field is highlighted with a yellow border. The units 'y', 'm', 'd', 'h', and 'm' are placed between the respective input fields.

To set date/time:

1. In the System Set screen, enter today’s date and current time.
2. Touch \checkmark (**Save**) to accept changes and return to the Tools screen.

6. **Tm Value** The Tm Value is used to calculate the Tm (melting temperature) and Ta (annealing temperature) for a primer pair.

1. In the Tools screen, touch **Tm Value** to open the screen.



2. Enter the primer concentration and the salt concentration.

3. Enter each primer sequence and then touch **Calculate** to view the Tm value of each primer, the average Tm value and the Ta value.

4. After you finish, touch  to return to the Tools screen.

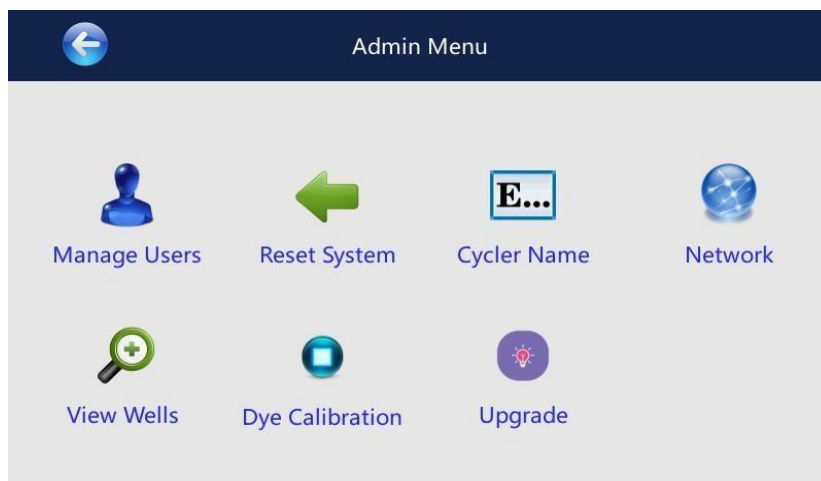
7. **Service** This function is reserved for service.

8. **Admin Menu** The Admin Menu is used to manage user accounts, reset to factory settings, set cyclor name, configure network connection, view the fluorescence signal of each well, calibrate the background and dye, and upgrade software. The Admin Menu button is only available when login as 'Admin'. The default password for Admin is ADMIN.

To use Admin Menu functions:

In the Home screen, touch **Tools**, then **Admin Menu**.

The Admin Menu screen opens.



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8.1 Manage Users

The Manage Users function is used to manage user accounts.

To manage user accounts, login as “Admin”:

1. In the Admin Menu screen, touch **Manage Users**.
2. The Manage Users screen lists all accounts currently available.



- Admin: control all functions in the Admin Menu screen. The default password for Admin is ADMIN.
- Normal user account: can create, rename and delete non system folders; can create, rename, copy, modify, save, delete and run programs; can delete and export qPCR data, can modify his or her login password (in the Tools>User PIN screen after login).
- Guest: has the same levels of user account privileges as normal user, and can login system without entering password.

In the Manage Users screen:

- a. To create a new user account, touch **Add** to open the Add User screen. Enter user name and password of no more than 12 characters.
- b. To edit user, select a user and then touch **Edit** to open the Edit User screen. Enter new user name or password and touch **Ok**.
- c. To delete a user account, select a user and then touch **Delete**. Touch **Yes** in the displayed pop-up window to delete the user.

8.2 Reset System

Use this function to reset system to factory settings.

8.3 Cyclor Name

The cyclor name is used for identifying the instrument when it is controlled via network by a computer. By default the cyclor name is set to the instrument's serial number. You can change it as need.

1. In the Admin Menu screen, touch **Cycler Name**.



2. In the Cycler Name screen, set a new Cycler Name. The name can be up to 15 characters.
3. Enable 'Allow remote control' to make the instrument can be controlled via network.
4. When you finish, touch ✓ (**Save**) to return to the Admin Menu screen.

8.4 Configure Network Connection

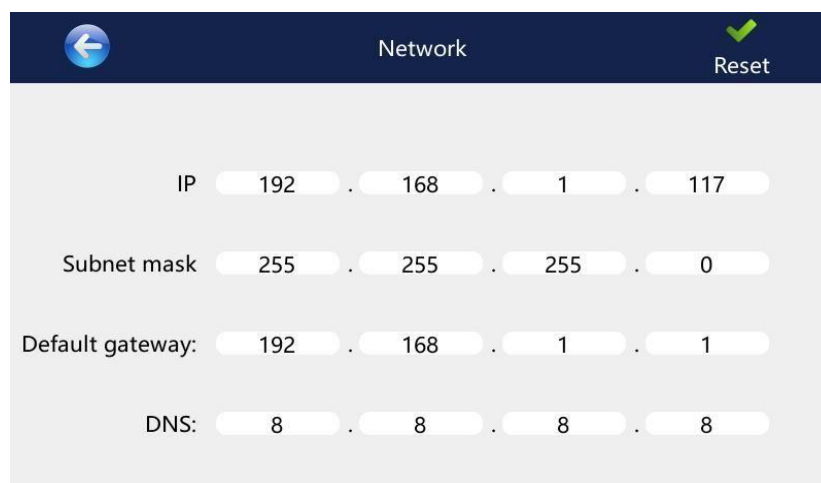
If your want to control the instrument via network, you need to configure network connection. You can select to set IP address (wired connection) or set Wi-Fi (wireless connection).

8.4.1 Set IP address:

When connecting the instrument to the computer through a network cable, set the IP address of the instrument and the computer to be the same network segment.

To set the IP address of the instrument.

1. In the Network screen, touch **IP Set**.

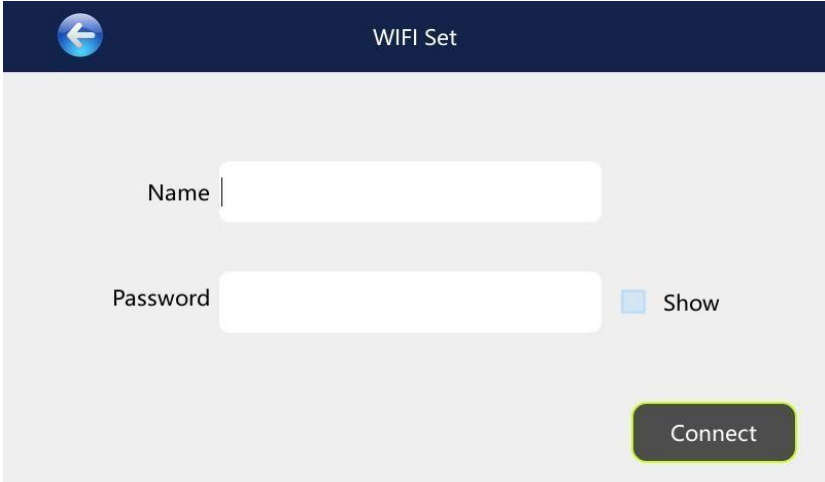


2. Modify the IP address, subnet mask, and default gateway.
3. When you finish, touch ✓ (**Reset**) to return to the Network screen.

8.4.2 Set Wi-Fi connection:

Before set Wi-Fi connection, insert a USB wireless adapter (additional purchase) in the USB-A port of the instrument.

1. In the Network screen, touch **Wi-Fi**.



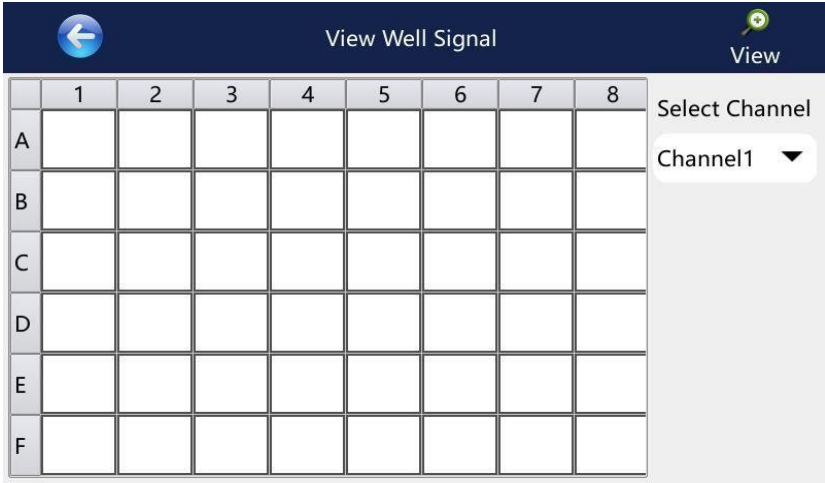
The screenshot shows the 'WIFI Set' interface. It has a dark blue top bar with a back arrow on the left and the title 'WIFI Set' in the center. Below the bar, there are two text input fields. The first is labeled 'Name' and the second is labeled 'Password'. To the right of the 'Password' field is a small blue square labeled 'Show'. At the bottom right of the screen is a dark grey button with the text 'Connect'.

2. Enter your Wi-Fi access hotspot name and touch **Connect**.
3. Enter the Wi-Fi password if required.

8.5 View Wells

To view the fluorescence signal value for each well:

1. In the Admin Menu screen, touch **View Wells**.
2. Select the channel from the channel drop-down list and click **View**.



The screenshot shows the 'View Well Signal' interface. It has a dark blue top bar with a back arrow on the left, the title 'View Well Signal' in the center, and a 'View' button with a magnifying glass icon on the right. Below the bar is a table with 6 rows labeled A through F and 8 columns labeled 1 through 8. To the right of the table is a 'Select Channel' dropdown menu with 'Channel1' selected.

8.6 Background Test and Dye Calibration

Each instrument is factory calibrated with several dyes. If a new dye needs to be calibrated, Please contact us.

[APPENDIX I] Troubleshooting

Problem	Problem	Possible Remedies
No display and no fan moving sound when power on	No line voltage	Wait for power restore
	Power cord unreliable	Check power cord and plug
Abnormal vibrating noise	Unstable bench	Unstable bench
	Uneven foot	Move to a stable foot
	Loose case screw	Fasten the screw
Normal display but can't heat or cool	Heat pump fails or no current is supplied	Shut off the power and call service
Sample block temperature (view via Wells screen of run status screen) is abnormal		
No display but fan is moving when power on	LCD fails or LCD related circuit fails	Shut off the power and call service
When power on, a message: "Power failure during running."	Lost power or power off the instrument when the last program is still running	Touch OK to cancel the message. Stop the last program
USB disk is not recognized	The USB disk is incompatible with the cyclor	Try another USB disk.
Water accumulated in sample wells	The cyclor is running under 4°C for a long time while the ambient humidity is high	Open the sample block and run the block temperature to 93°C for at least 30 minutes. Recommended to raise the hold forever temperature to 10°C.
Tubes are deformed	Tubes are poor in quality, too soft or bad heat resistance.	Use good quality PCR tubes.
Sample losing because evaporate	Heat lid didn't work or the set temperature of lid is too low.	Turn on the heating of lid and set the temperature to above 105°C.
	Tubes, strips or microplate are poor in quality	Changes tubes, strips or microplate.
	Microplate is not sealed tighten.	Ensure tight seal on the microplate.
	Sample volume is too small.	Sample volume should above 10µl
System clock is abnormal	System clock should be reset	Adjust date and time via Tools>System Set screen
	The battery in the instrument should be changed	Shut off the power and call service
Warning message: "Instrument failure! Error code: xx"		Shut off the power and call service