

# Real-Time PCR System

## Model Q2000A/B/C

### Quick Guide

Ver. 2.0 2020.03

#### 1 Install the Instrument

##### 1.1 Site Requirements

The instrument is intended for indoor use.

**Power supply** The instrument requires 100-240V, 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 Q2000 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

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'.

#### 2 Touch screen operation

Scroll left and right: Swipe your finger left or right in the corresponding area of the screen.

Page up and down: Swipe your finger up or down on the corresponding area of the screen.

### IMPORTANT!

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.

### 3 Introduce the Home Screen

The Home screen displays the running status ring. The ring displays the current running status (idle or remaining time) and sample temperature. Touch it to open Run Status screen.

Buttons:

New Program: Creates new PCR programs.

All Program: View all saved programs.

qPCR Data: View and export qPCR experiment data.

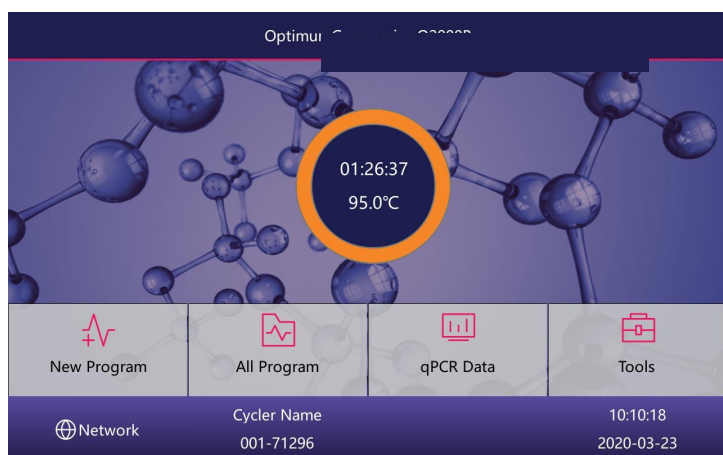
Tools: Sets instrument parameters and uses other tools.



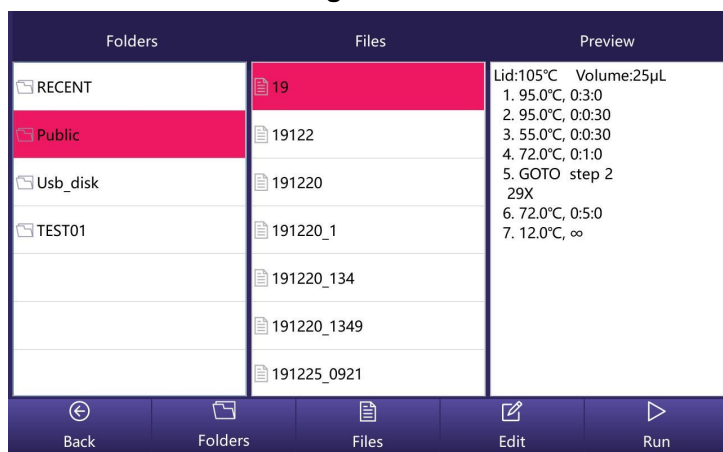
Display the currently logged in user, click this button to open the Login screen and switch another user.



Network User is displayed when using the PC software to control the instrument.



### 4 Introduce the All Program Screen



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The screen has three columns. The first column lists all available folders. The following folders are system folders:

- RECENT: shows the recently run 20 programs for quickly viewed/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.

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

## 5 Create and Edit Program

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



Touch **Add** to add various steps; Touch **Delete** to delete a selected step;

Touch **Options** to modify a step's options, such as changing the ramp rate;

Touch **Save** to save the experiment; Touch **Run** to run the experiment directly;

\* 29X: To perform a PCR reaction with 30 cycles, you should enter a number of 29.

\* If there is no fluorescence acquisition step (Plate Read) in the experiment, the experiment will run as ordinary PCR experiment.

### Sample Volume and 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:

- For Sim-tube mode, 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.

### Lid temperature:

It is recommend to select a temperature 5-10°C above the highest temperature of the program steps (e. g., the pre-denaturation step) to protect sample from evaporation and condensation.

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## 6 Load Samples

### 6.1 Open Sample Block and Place Tubes

The instrument uses a unique drawer model structural design to facilitate the user to place and remove the reaction vessel.

1. Turn the knob counterclockwise, unlock the door lock.
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;

### 6.2 Close Sample Block

1. 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.

It is important to turn the knob to a horizontal position before starting the run to prevent evaporation of the sample.

#### **IMPORTANT!**

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

#### **IMPORTANT!**

- **The sample block of this instrument can only use:**

0.1ml PCR tubes / 0.1ml 8-tube strips

0.1ml 96-well PCR plate, no skirt or half-skirt (half-skirt is recommended)

#### **cannot use:**

0.2ml ordinary PCR tubes / 0.2ml 8-tube strips / 0.2ml 96-well PCR plate

#### **Recommended white tubes.**

Note:

- Wear a powder-free latex glove or PE glove when handling qPCR reaction vessels.
- The reaction vessels should be sealed tightly with optical flat caps or sealing film to prevent sample evaporation. Before using new reaction vessels, flat caps, and sealing film for the first qPCR experiment, ddH<sub>2</sub>O should be used instead of the reaction mixture to test the sealing performance. Do not use dome caps, opaque films or foils to seal the vessels!
- To achieve consistent PCR results, use uniform, thin-walled vessels designed for qPCR. White tubes may be better than frosted tubes, frosted tubes may be better than clear tubes. The vessels should have heat resistance of up to about 120°C.
- The sample wells of the sample block should keep clean.

## 7 Select Program to Run

### 7.1 To run an ordinary PCR program,

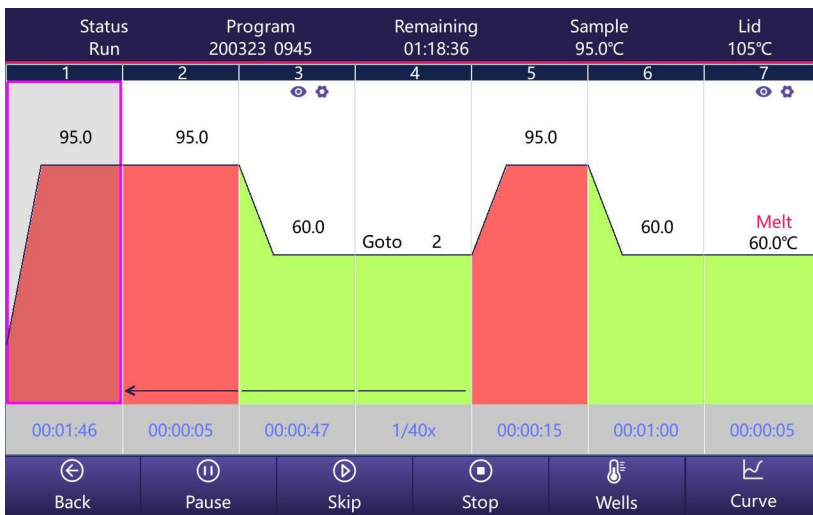
- Touch **New Program**, create a new program and then touch **Run**.

- 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**.

## 7.2 To run a Real-Time PCR program,

- Open the qPCR Design and Analysis Software on the computer, edit the experiment, 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 it to a folder in the instrument, select the copied file, 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, switch to the software's Run page, touch **Run**.

## 8 View Run Status



## 9 Export Data

Touch **qPCR Data** on the Home screen, open the qPCR Data screen. 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.

## 10 Introduce the Tools Screen

In the Home screen, touch **Tools**, open Tools screen. The Tool screen contains the following functions:

**About**: Views product information about the instrument.

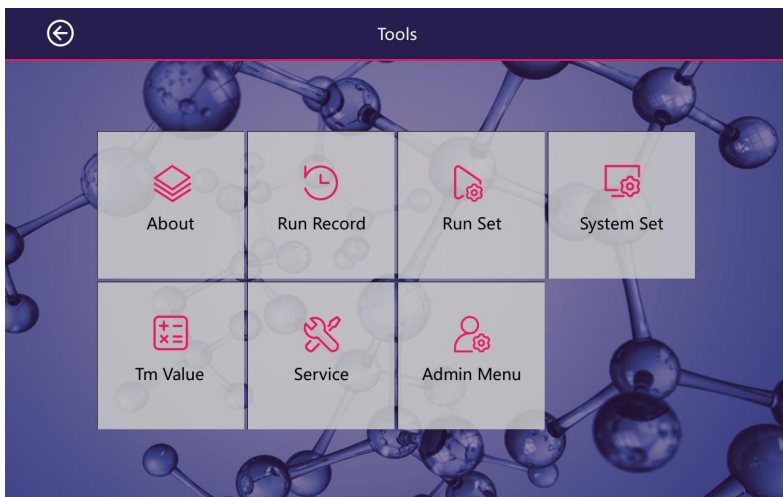
**Run Record**: Views stored run records.

**Run Set**: Set the temperature parameters of the hot lid and block during running / standby.

**System Set**: Set the system date and time, etc.

**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 Menu 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 default password is ADMIN), the Admin Menu’s icon appears. Click this button, the Admin Menu screen appears. This page contains the following functions:

**Manage Users:** add or delete users, modify user passwords (if you change the default password of the Admin, the new password should be saved properly to avoid forgetting).

**Reset System:** restore the instrument to its factory state and delete all data for all users, please operate with caution.

**Cycler Name:** Set the instrument name. Enable ‘Allow remote control’ to make the instrument can be controlled via network using the Optimal qPCR Design and Analysis Software on your computer.

**Configure Network Connection:** set IP address (wired connection) or set Wi-Fi (wireless connection). Before set Wi-Fi connection, a USB wireless adapter (additional purchase) is required.

**View Well Signal:** View the fluorescence signal of each sample well.

**Background Test and Dye Calibration:** The instrument is factory calibrated with commonly used dyes (FAM; HEX, VIC, etc.). If you need to calibrate a new dye, please contact us;

**Software upgrade:** When a new version is available, please copy the file to the root directory of a USB flash drive, insert the USB flash drive into the USB port of the instrument and touch **Upgrade**. After the upgrade, check the version number through **Tools > About** screen.

