Medical–Biological
Research & Technologies

BioQuant-96

Fluorescent Quantitative Detection PCR system

User Instructions

 Attention!	Users are recommended to read the contents of this manual thoroughly before operating the Fluorescent Quantitative PCR Detection System.

In order to carefully observe all special Warnings and Cautions outlined in this manual, this manual should be maintained properly in good condition for reference.

 Caution:	Copyright reserved. SIA Biosan reserves the right to modify this manual at any time without notice.

Thank you for your purchase of this product.

Before initial use of this instrument, please read this manual thoroughly

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Chapter 1 Important Notes

1 1 Practice

 Note:	Very important information is contained within this manual and it should be carefully read before first use of the instrument. Failure to operate instrument according to the instruction could result in damage or abnormal functioning of the instrument.
 Warning:	The warning message requires extremely careful operation of a certain step. If the instrument is not used in the manner prescribed by the manufacturer, the protection provided may be compromised.

1 2 Safety

During operation, maintenance and repair of this instrument, the following basic safety notes must be observed. In case of failure to follow these measures or the warnings or notes indicated herein, the basic protection provided by the instrument, its safety criteria of design and manufacture, and its predicted use range would be impaired.

SIA Biosan shall not be held responsible for any consequences resulting from the user's failure to observe the following requirements.

 Note:	The instrument, complying with the Standard GB4793.1/IEC61010-1, is a general instrument of class I, the protection degree is IP20. It is intended for indoor use. The instrument complying with the Standard YY0648/IEC61010-2-101 is used for IVD Medical Equipment.

a) Instrument earth

In order to avoid an electric shock, the input power cable of the instrument must be properly earthed. This instrument uses a 10A 3-core earthed plug, which is provided with a third (earth) pin. It is for use with an earth type power socket and is a safety unit. If the plug cannot be inserted into the socket, the socket must be fixed by a qualified electrician, to maintain the safety function of the plug and the protection it provides.

b) Keeping apart from the live circuit

Operators are not allowed to disassemble instrument protection, replace components or make internal adjustment without authorization. If necessary, it must be completed by certified professional maintenance personnel. It is forbidden to replace components when power supply is connected.

c) Use of power supply

Before connecting to the mains and switching the instrument on, make sure the voltage is consistent with the instrument's requirements (220V~, 50Hz). The rated load for the power socket must not be less than the instruments maximum load of 1000VA

d) Power wire

The instrument is supplied with a power cable, which should be used at all times when operating the instrument. If the power cable is damaged it should be replaced with a new one of the same specifications. When using this instrument, do not press anything on the power cord and do not put the power cord in the traffic area. If the power cord comes in contact with the hot surface, add protection to prevent the insulation from being damaged.

e) Insertion and withdrawal of power cable

At insertion and withdrawal of power cable, the back of the plug shall be firmly held with the hand. The plug must be completely and tightly inserted into the socket and must not be removed by pulling the cable.

f) Placement of instrument

This instrument should not be positioned in a place where it is difficult to cut off the power supply.

This instrument should be placed in a low relative humidity (RH) and low dust environment well away from any water (e.g. sinks and pipes). The room should be well ventilated, and free from corrosive gas, or interference from a strong magnetic field. The instrument should not be placed in a wet or dusty location, but should be positioned on a sturdy, level and secure table appropriate to its weight.

The openings on this instrument are for ventilation purposes and, in order to avoid overheating of the instrument, they shall not be blocked or covered. When a single set or several sets of instruments are used, the space between its ventilation openings and the nearest object should not be less than 30cm. When multiple instruments are used at the same time, the distance between each instrument should not be less than 50cm.

Excessive environmental temperature would impair the test performance and could result in failure of the instrument. This instrument should not be used in locations subjected to direct sunlight or strong radiation or light source, as this could impair the fluorescence detection. The instrument should be kept away from hot gas, furnaces, stoves and all other sources of heat.

When switched off, the power should also be switched off. If the instrument is not going to be used for a long time, the power should be switched off, the power plug withdrawn, and the instrument covered with soft cloth or plastic film to prevent dust or foreign bodies entering the machine.

g) Notes during operation

During test, cares shall be taken to prevent liquid from dropping onto the instrument. The castoff used in test, such as consumables, reagent, and so on, should be treated as require, and should not be thrown away or poured.

During test, if there are hazardous substances, user must be trained before using.

Hazardous substances, which has been used, should be coped with and saved according to direction for use.

User, who operates the instrument, must be trained and has relevant quantification.

 Caution:	If any of the following should occur, you should immediately switch off the power supply, withdraw the power plug from the power socket, and contact the supplier to effect a repair: Repairs can only be carried out by suitably qualified engineers. • Liquid gets inside the instrument. • The instrument is rained upon or water is spilled over it. • The instrument works abnormally, generates abnormal sound/s, or generates a strange odor. • The instrument is dropped, or its casing is damaged. • There is an obvious change in the function of the instrument.
 Caution:	When you deal with potential contagious matter such as body's tissue sample or reagent, which is likely to touch skin, protecting glove or other protecting measures need to be used.

h) Re-transport

If the instrument needs to be transported again, the detection hole position and the instrument should be thoroughly cleaned and sterilized with ultraviolet light before transportation.

i) Warning Sign

Warning identification

DANGER!		Area with the mark pasted on the instrument shall avoid improper use and be careful of danger.
SCALDING!		Area with the mark pasted on the instrument causes high temperature and is scalding during use.
BIOHAZARD		Area with the mark pasted on the instrument will caused biohazard during use.
PROTECT CONDUCTOR TERMINAL		PROTECT CONDUCTOR TERMINAL is near to the area with the mark pasted on the instrument

 Caution:	When  warning mark is pasted in the instrument, it means that the metal part (module) near this sign shall not be touched with any part of the body during the operation of the instrument or a period of time immediately after the operation of the program to avoid burns!
 Warning:	The operator may come into contact with or remain substances harmful to the organism or infectious substances during the use of the instrument. The operator should be aware of its hazards and strictly comply with the relevant provisions of the national PCR laboratory in accordance with the use environment of the instrument. Operators need to be trained and qualified.

j) Signs on the external packaging

Up		Indicates that the correct position of the transport package is vertical upward.
Fragile		The transport packages contain fragile goods, so they should be handled with care.
Keep dry		The package should be rainproof.
The limit of stacking layer		Maximum stacking layer of the same package is 2.
Temperature limit		Indicates that the temperature limit of transportation package should be - 20 °C to 55 °C.

1 3 Maintenance of Instrument

If there is any stain on the surface of the instrument, it can be cleaned with soft cloth and cleaning paste.

Heat conducting oil medium is not allowed in the module hole of this instrument.

The drawer should be closed in time after the normal storage and use of the instrument to prevent dust accumulation.

 Warning!	When cleaning the instrument, the power should be turned off. The instrument surface should not be cleaned with corrosive cleaning agents. The instrument module includes precise optics, dust, foreign matter and residue should be avoided

1 4 After-sales Services

The warranty content and scope are shown in the warranty sheet.

 Note:	After unpacking, immediately check the goods against the packing list. If any parts are damaged or missing, please contact the supplier immediately. After qualification of acceptance, complete the product acceptance sheet and send (or fax) the copied sheet to the supplier for filing and maintenance. Before first use of the product, the user shall complete the instrument registration form and send to SIA Biosan, for product registration. After unpacking, the packing box and packing materials should all be kept in case it is required for transportation or service in the future. In the event that a repair is required, the instrument must be disinfected before being sent to the repair department. It is recommended that service personnel disinfect the instrument on receipt in the service department, before commencing any scheduled work. SIA Biosan, shall bear no liability in the event of any damage to the instrument occurring during transportation to the service department due to improper packaging.

Chapter 2 General description

This chapter mainly describes the uses, characteristics, specifications, performance parameters and software functions of 96-well real-time quantitative PCR instrument.

2 1 Scope of Application

The product is based on the principle of fluorescence quantitative polymerase chain reaction (PCR) and is used together with the supporting detection reagent. It is used for qualitative and quantitative detection of the targets in DNA/RNA samples from human nucleic acid samples, including pathogens and human genes.

2 2 Features

- New, user-friendly operation, operation interface, smooth operation
- Fluorescence real-time detection method is adopted to realize simultaneous amplification and detection in the same tube without post-processing
- Advanced thermoelectric refrigeration technology ensures super high-speed heat cycle system heating, fast and stable refrigeration
- Multi-point temperature control ensures higher temperature uniformity of 96 sample wells
- 6 partition temperature control function
- Stable and accurate gradient functions of 1 ~ 36°C ensure optimized PCR conditions
- the thermostatic function of SOAK allows the PCR reagent to be stored at low temperature
- Long life LED excitation light source requires no maintenance
- Advanced fiber conduction technology makes photoelectric detection system more sensitive and reliable
- Real-time dynamic monitoring of the whole process of PCR amplification was carried out Real-time dynamic monitoring of the whole process of PCR amplification was carried out
- Wide linear range, initial DNA copy Numbers up to 10 orders of magnitude do not require gradient dilution

- There is no need to turn on the PCR reaction tube, which can avoid product contamination during and after PCR and ensure the accuracy of the results
- Multi-color fluorescence detection in a single reaction obtains more information
- The application of thermal cover technology has realized the oil-free operation of PCR
- Chinese language interface, flexible program setting, comprehensive analysis and reporting functions, all parameters can be stored
- Multiple or single sample reports can be printed
- The automatic, accurate and timely service of remote network provides the most advanced technical support for the 96-well quantitative PCR instrument

2 3 Product Structure and Composition

This product is mainly composed of control parts, thermal cover parts, thermal cycle parts, photoelectric parts, transmission parts, power parts and software (V1).

2 4 Performance Parameters

Model	**BioQuant-96**					
Sample size	96x0.2ml; suitable for single tube, 8 row tube and 96-well plate (no skirt board, half skirt board)					
Detection channel	F1	F2	F3	F4	F5	F6
Applicable dye	FAM, SYBR Green I	VIC, HEX, TET, JOE,	ROX, TEXAS-RED	Cy5 Quasar -670	Cy5.5 Quasar -705	Optional
Module operating temperature range	4°C~99.9°C (Minimum setting scale:0.1°C)					
Average heating rate	When rising from 50°C to 90°C, it should be no less than 3.5°C/s					
Average cooling rate	From 90°C to 50°C, should not be less than 3.0°C/s					
Module temperature control accuracy	Should be no greater than 0.1 °C					
Temperature uniformity	The temperature difference is within ±0.3°C					
Temperature control accuracy of hot cover	105°C±5°C					
Fluorescence intensity test repeatability	CV□3%					
Mode of operation	Continuous operation					
Operating system	Windows7/Windows8/Windows10					
Input power	100-240V~ 50Hz 1000VA					
Overall dimensions	490mmx290mmx391mm					
Weight	28kg					

2 5 Production Date and Service Life

Production date: see label for details.

Product shelf life: 5 years

2 6 Function Overview of Supporting Software

- Parameter setting function (including temperature, time, cycle number, rise and drop rate, detection channel selection);
- Note function of text content;
- Sample data recording function (sample number, sample name, sample data);
- File operation display function (PCR thermal cycle data display, fluorescence detection data display, real-time display of various data during the operation of the instrument);
- Test data analysis function (analysis function can be used alone without instrument connection);

- Analysis results output function (one can output the analysis results to other types of files, such as: EXCEL, TXT files; be able to query and print the analysis results; one can change the print format and select the print item);
- File storage function (setting data, running data, analysis results);
- Fault protection and alarm function.

 Caution:	The above software functions are for reference only, without prior notice to the change of software functions

2 7 Product Software Version

Release version of this product software: V1

Chapter 3 Preparations

This chapter mainly introduces the use, transportation and storage conditions, structure composition, software installation/unloading, and preparation before starting up the BioQuant-96fluorescence quantitative PCR instrument.

3 1 Transportation and Storage Conditions of the Instrument

Ambient temperature: -20°C~55°C

Relative humidity: □80 %

Atmospheric pressure: 75kPa~106kPa.

3 2 Normal Working Condition

Ambient temperature: 10°C~30°C

Relative humidity: □70 %

Atmospheric pressure: 100-240V~ 50Hz 1000VA

 Caution:	Before using the instrument, please confirm whether the Working Conditions meet the above requirements. Note that the power socket is a socket with reliable grounding.

3 3 Preparation before the Instrument is Switched on

Power cord connection: the power cord attached to the instrument should be used. When connected, the instrument power switch should be in the closed state. After connecting, check whether the power cord and the instrument socket are too loose, if too loose, it should be replaced.

 Caution:	The attached power cord is reliable but may cause the connection to be too loose after several unplugging. In this case, the power cord should be replaced. The power cord should be replaced with the same specification.

3 4 Installation of Supporting Software

3.4.1. Selection of a Computer System

- System environment
- Operating system: Windows XP/Windows Vista/Windows7/Windows8
- Operating environment:.Net Framework 4.0
- Other software: PDF reader
- Minimum configuration:

- Processor: Intel Core i3
- Memory: 2GB
- Hard disk: 10GB

3.4.2. BioQuant-96 Software Installation

- Double click PcrServer installation file (PcrServerSetup.exe)► Display the installation interface (select the installation language) ► Set installation path ►install
- Double click BioQuant-96installation file (BioQuant-96DiagnosisSetup.exe)► Display the installation interface (select the installation language)► Set installation path ►install

3.4.3. BioQuant-96 Software Uninstall

- Control panel ►Add/remove programs► PcrServer ►uninstall
- Control panel ►Add/remove programs►BioQuant-96►uninstall

Chapter 4 Start

4 1 Check before Starting

Before putting in the power plug and powering up the detection system, the following contents should be confirmed:

- Whether the power supply is consistent with the voltage required by the system;
- Make sure the power cord plug is correctly and reliably plugged into the power socket;
- Whether the surrounding working environment and equipment placement conditions meet the requirements.

4 2 Boot

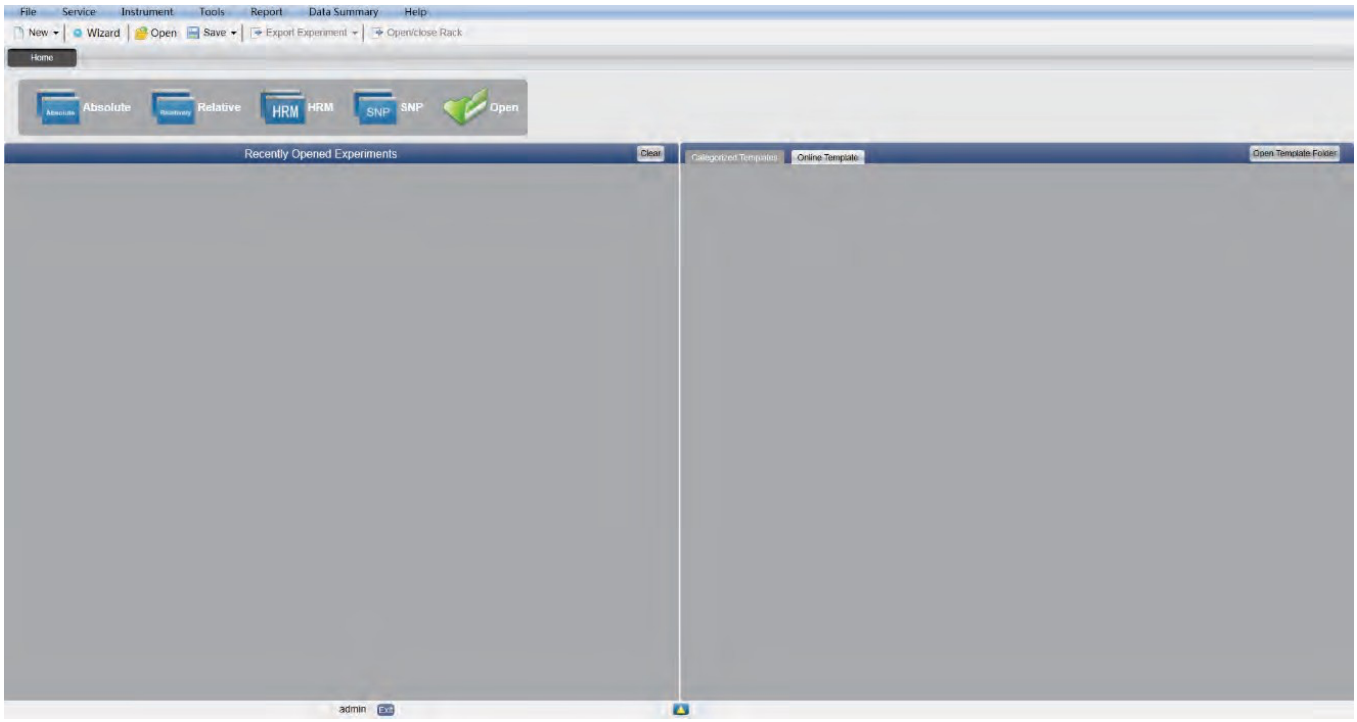
Step 1: turn on the power switch of the backboard of the instrument;

Step 2: after entering the operating system, start the BioQuant-96 real-time fluorescence quantitative PCR instrument.

To start the software, click "BioQuant-96" on the start/program menu or double click on the shortcut icon on the desktop.

4 3 Software Start-up Interface

Double click any software shortcut icon of the BioQuant-96 real-time quantitative PCR instrument on the desktop, the corresponding start-up screen will appear.



The system window consists of the menu bar, the toolbar and the main page.

Chapter 5 Absolute Quantification

5 1 Design Experiment

This section describes how to design a new absolute quantification experiment and covers inspection item setting, sample information setting, reaction plate setting and Program Setting.

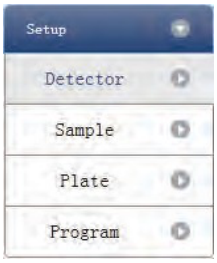
5.1.1. Create New Absolute Quantitative Experiment

a) Click build Absolute on the Home interface and this will open the absolute quantitative experiment window.

Note:	The Absolute quantitative experiment can be also created by: • Clicking File ► New ► Absolute on the menu bar • Clicking New ► Absolute on the toolbar

5.1.2. Detector Setting

a) Click Setup ► Detector

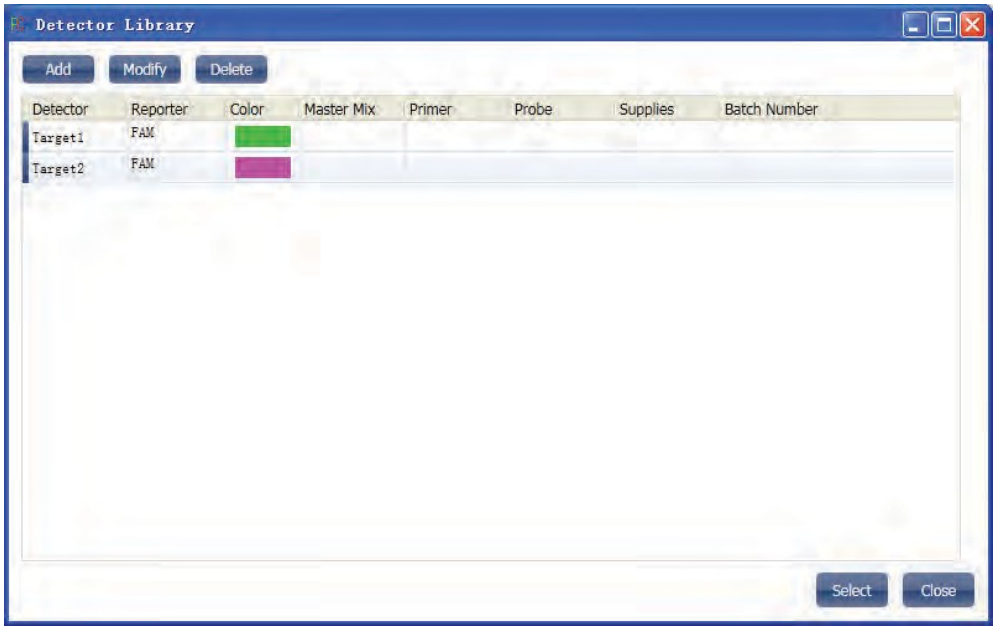


b) Input experiment properties. Input the experiment name, user name and any comments in the experiment properties column.

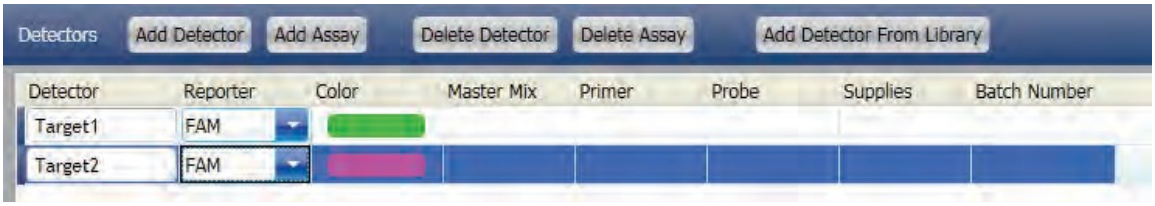
c) Detector Setting. Set up the Detector, Assay, Dye and Color. If necessary, the user can also:

- a. Add detector
- b. Add assay
- c. Delete detector
- d. Delete assay

- e. Add the detector in the Detector Library: click Add Detector From Library ► the Detector Library window will pop up ► select the Detector in the window to be added. The user can also conduct Add, Modify and Delete operations in the item library.



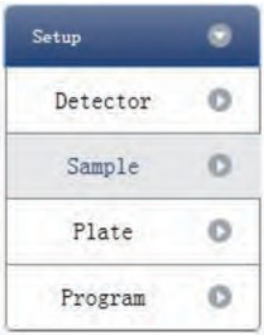
- Set up the detector, set up the assay, set up the dye name and set up the color



d) 4. Set up reference dye

5.1.3. Sample Information Setting

a) Click Setup ► Sample



b) Add sample information

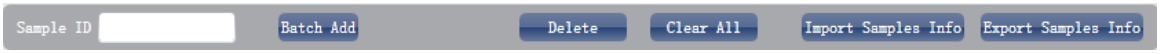
- Itemized addition: input ID in Sample ID ► press Enter ► add information for one sample
- Batch addition: click Batch Add ► the Batch Add window will pop up

c) Delete sample information

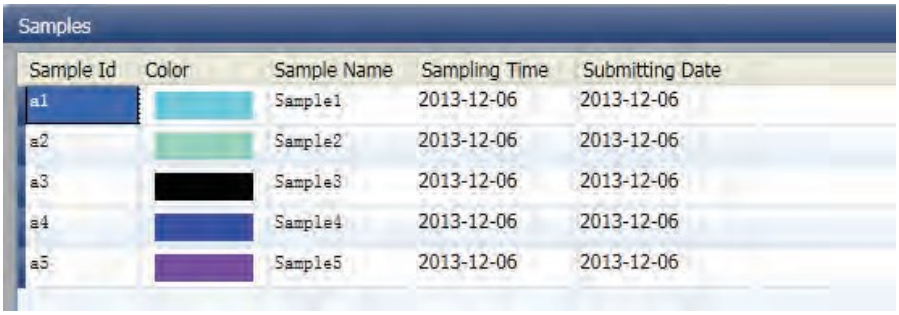
- Itemized deletion: select one sample ► click Delete ► delete the selected sample information
- Delete all: click Clear All ► delete all sample information

d) Import/Export sample information

- Click Import Sample Info ► the File Import window will pop up ► import sample information file in CSV format
- Click Export Sample Info ► the Save As window will pop up ► the sample information will be exported in CSV file format

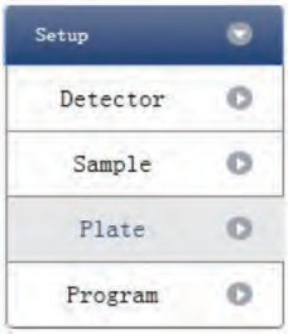


e) Set up sample information



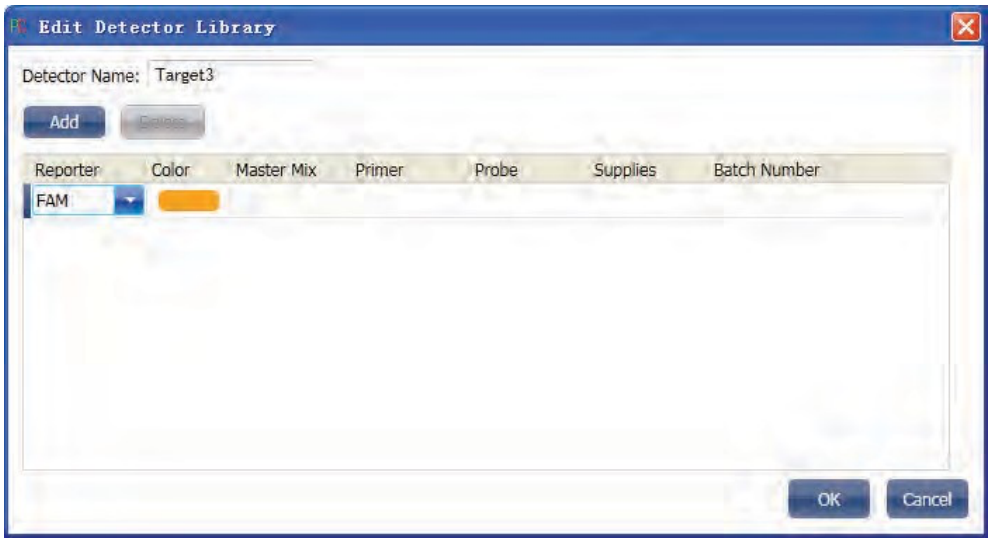
5.1.4. Reaction Plate Setting

a) Click Setup ► Plate



b) Set up the inspection criteria of the reaction plate

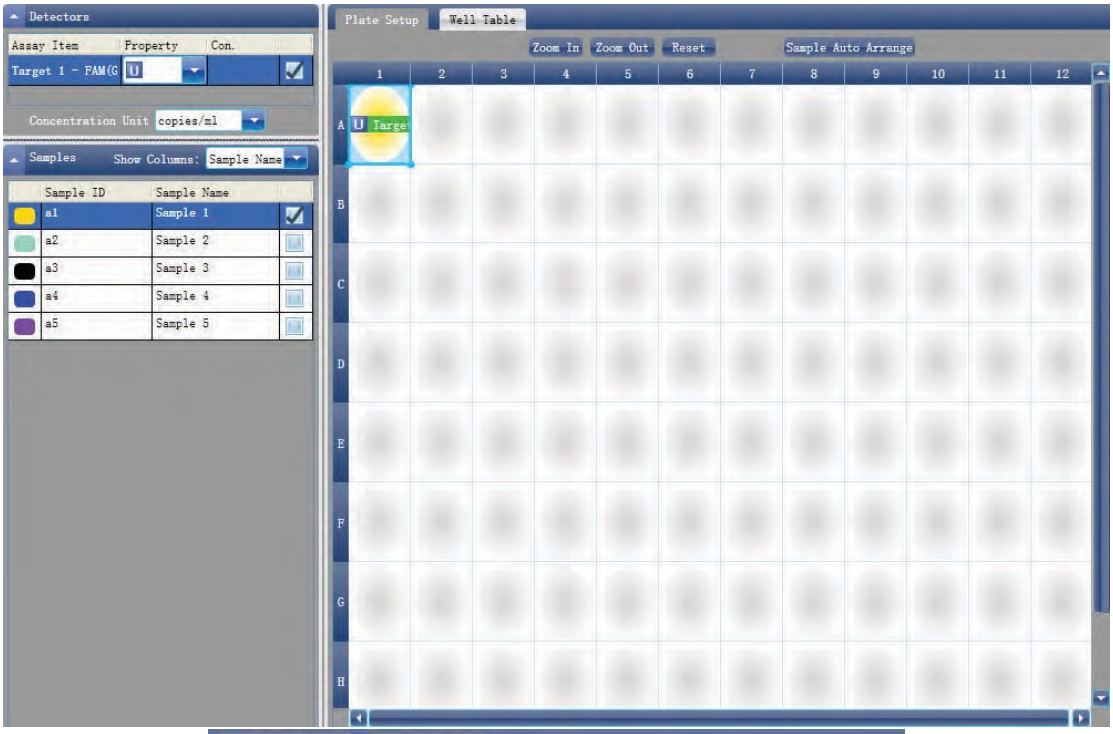
- Select reaction plate well site: click Reaction Plate well Site. The user can also right click the reaction plate well site to Copy, Paste and Add New Detector. Adding a new detector will open the Edit Detector Library window.



- Select Assay item and modify the property, concentration and concentration unit.

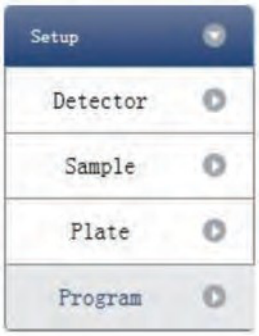
Property	Name	Concentration	Concentration unit
U	Unknown	NO	Copies/ml
S	Standard	YES	IU/ml
N	Negative	NO	Fg/ml
P	Positive	NO	Pg/ml

- Select a sample and the list displayed will change
- Zoom-In, Zoom-Out and reset the reaction plate.
- Sample Auto Arrange
- Check Well Table



5.1.5. Program Setting

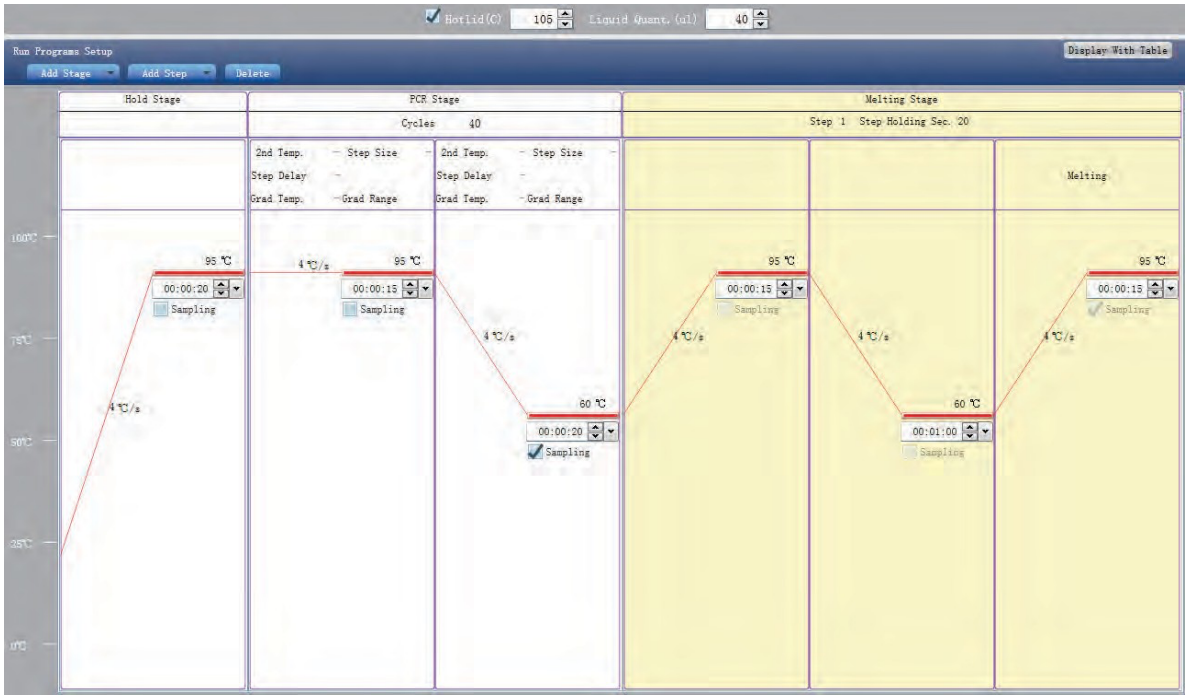
a) Click Setup ► Program



b) Run Program Setup

- Create new stage: the user can create a new Hold Stage, Cycling Stage or Melting Stage. The user can also click Add Stage directly and the default will be creating a new Cycling Stage.
- Create new step: the user can create a new step Before or After the currently selected step. The user can also click Add Step and the default will be adding a new Step at the end of the currently selected stage or after the currently selected step.
- Delete: the user can delete the currently selected step or stage

- Display form: click Display with Table ► new window will pop up ► the details of the current experiment will be displayed in a table.
- Set up the experimental data of the hold stage, cycling stage and melting stage melting section
- Set up the hot-lid temperature and liquid volume



5 2 Prepare for Reaction

The user should make full preparations prior to the experiment:

- Ensure appropriate materials are used.
- Ensure the arrangement of the PCR reaction plate is consistent with the setting layout of the reaction plate in Section 2.4.

5 3 Run the Experiment

This section describes how to run/operate the experiment after loading the reaction plate and includes how to operate the fluorescence curve, the temperature curve and programming

Caution: Before starting the machine, please confirm that you have completed the inspection before starting the machine and carry out the correct operation according to the starting steps. Turn on the system, and the system is in running state.

5.3.1. Preparation for reagent sample

Prepare reagent: BioQuant-96 real-time fluorescence quantitative PCR instrument adopts 0.2ml centrifuge tube to place reagent samples, and 10μl~50μl is recommended for the best reaction system for samples.

The instrument allows the use of standard single tube, rack tube, skirt-free plate and other types of top optical transparent tube.

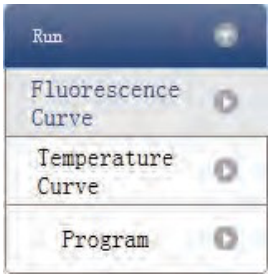
Centrifugal operation: Before placing reactions into the instrument, it is recommended that a short centrifugal spin is used to ensure that the reagent is at the bottom of the reaction tube and the reagent/sample mix is free from bubbles.

Placement of test tubes: if the number of samples is less than the number of holes in the module, try to distribute the sample tubes evenly in the holes of the module during the placement of test tubes, so as to ensure the smooth pressure of hot cover on the top of the tube during operation. Meanwhile, the load of the module is uniform, and the temperature change of each test tube is uniform.

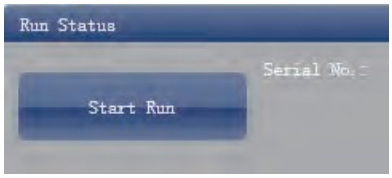
		
Correct	**Incorrect**	
The sample is at the bottom of the PCR tube	**Requires a greater spin speed**	**Requires a longer spin time**

5.3.2. Run Fluorescence Curve

a) Click Run ► Fluorescence Curve



b) Click Start Run



c) Operating confirmation. Modify hot-lid temperature and liquid quantity (sample volume).

d) After it starts operating, the user can:

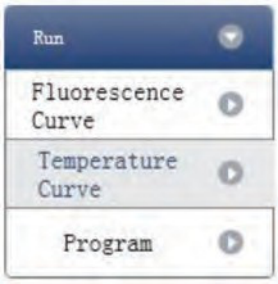
- Skip the current stage
- Add a cycle
- Delete a cycle
- Stop run

e) Plot display setting

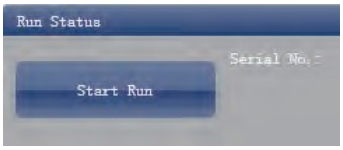
- Assay item
- Plot color

5.3.3. Run Temperature Curve

a) Click Run ► Temperature Curve



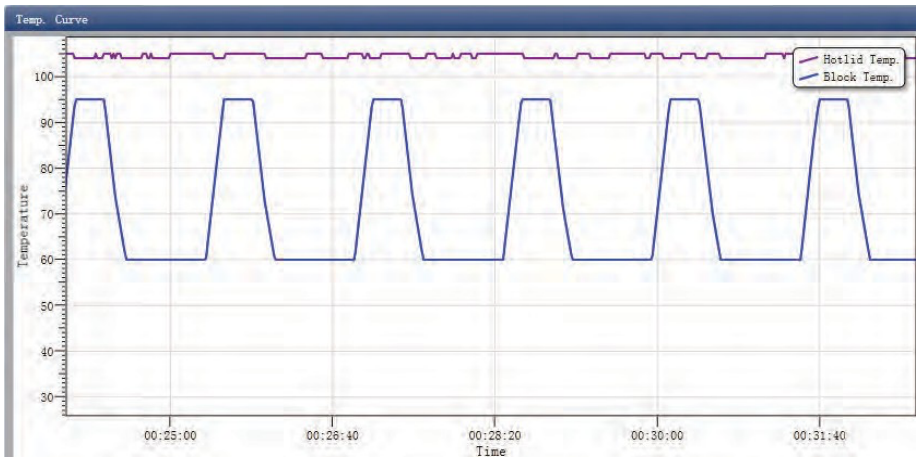
b) Click Start Run



c) Operating confirmation. Modify hot-lid temperature and liquid quantity (sample volume).

d) After it starts running, the user can:

- Skip the current stage
- Add a cycle
- Delete a cycle
- Stop run



5.3.4. Program Setting

The user can only check the Program Setting but cannot make modifications.

5.3.5. Prompts which may occur during running:

- Hot-lid temperature sensor alarm prompt
- Sink temperature sensor alarm prompt
- Environmental temperature sensor alarm prompt
- Module temperature sensor alarm prompt
- Module sensor short-circuit or short-circuit alarm prompt

Caution: In case the temperature alarm displays during the running of a Program, the PCR detection system will terminate the current Program. The instrument should be switched off and then re-started.

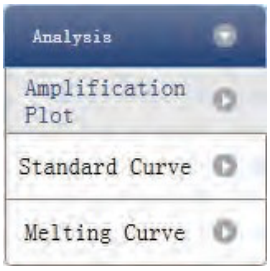
5 4 Experiment Analysis

This section describes how to view the experiment analysis results after running an experiment and adjusting parameters for re-analysis.

5.4.1. Check Results

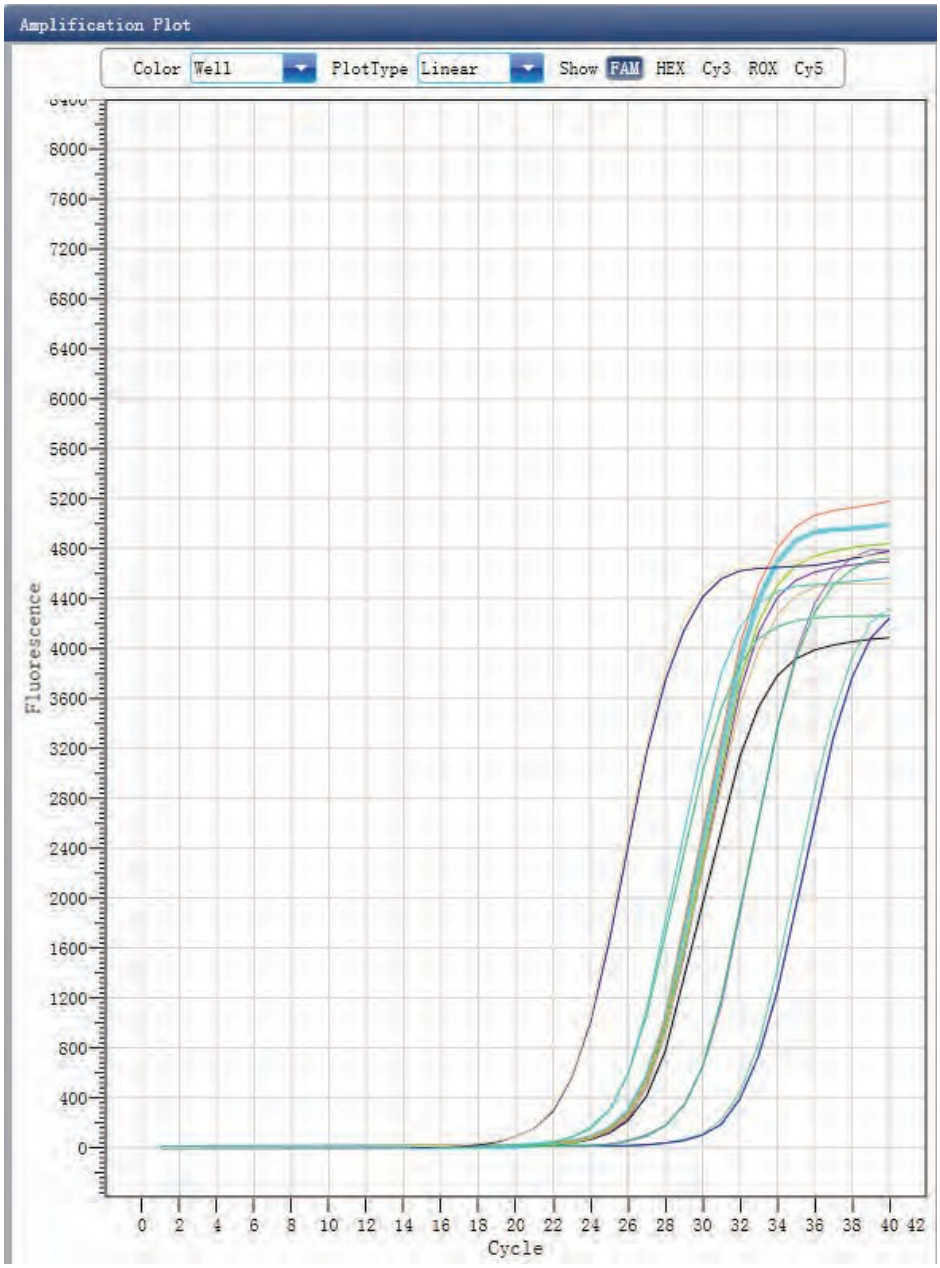
a) Check the Amplification Plot

- Click Analysis ► Amplification Plot

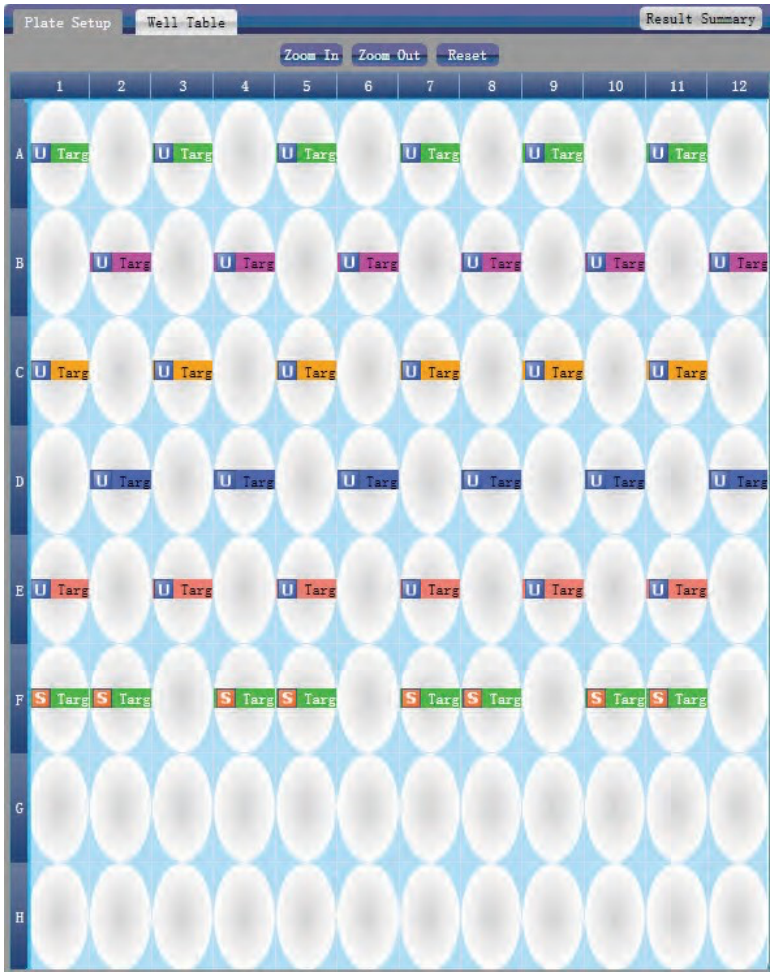


- Check the amplification curve
- Set up color
- Set up plot type

- Set up show dye. When the background color of a dye name is blue, it will be displayed; while white indicates it will not be displayed.



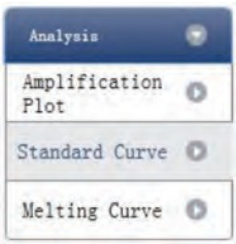
- Check the reaction plate
- Select reaction plate well site and check corresponding well site curve. The default is all wells are selected
- Zoom-In, Zoom-Out and reset the reaction plate
- Check well table
- Check results summary



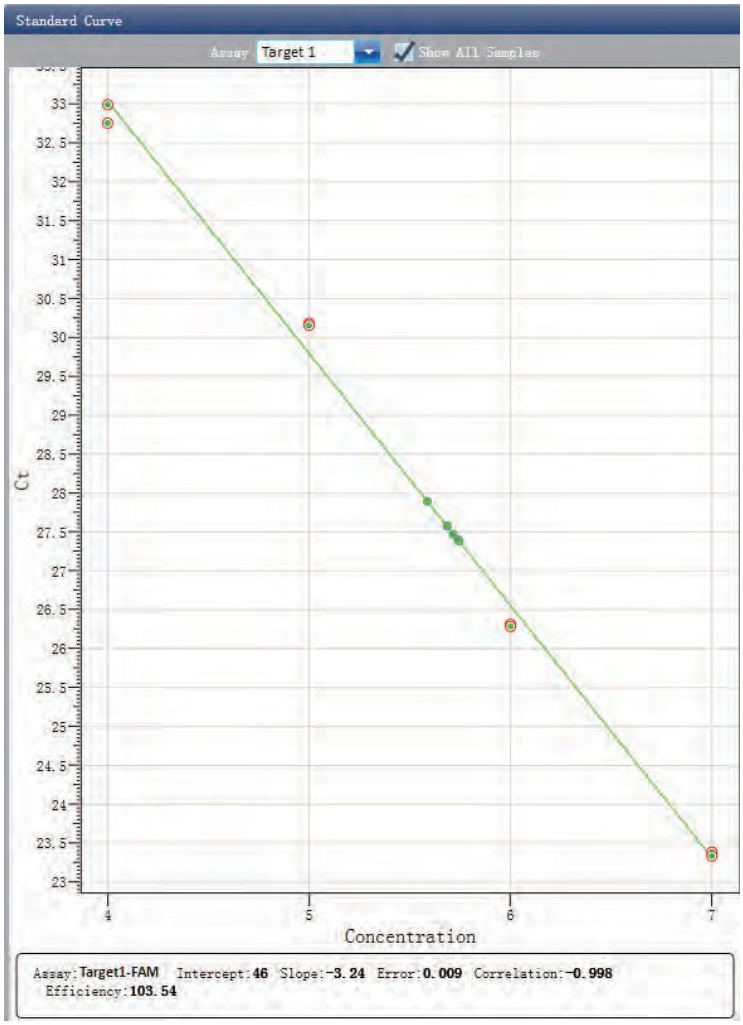
- Set up assay
- Set up assay
- Set up threshold
- Set up automatic baseline. When the threshold value is not automatic, the user cannot set up the automatic baseline

b) Check Standard Curve

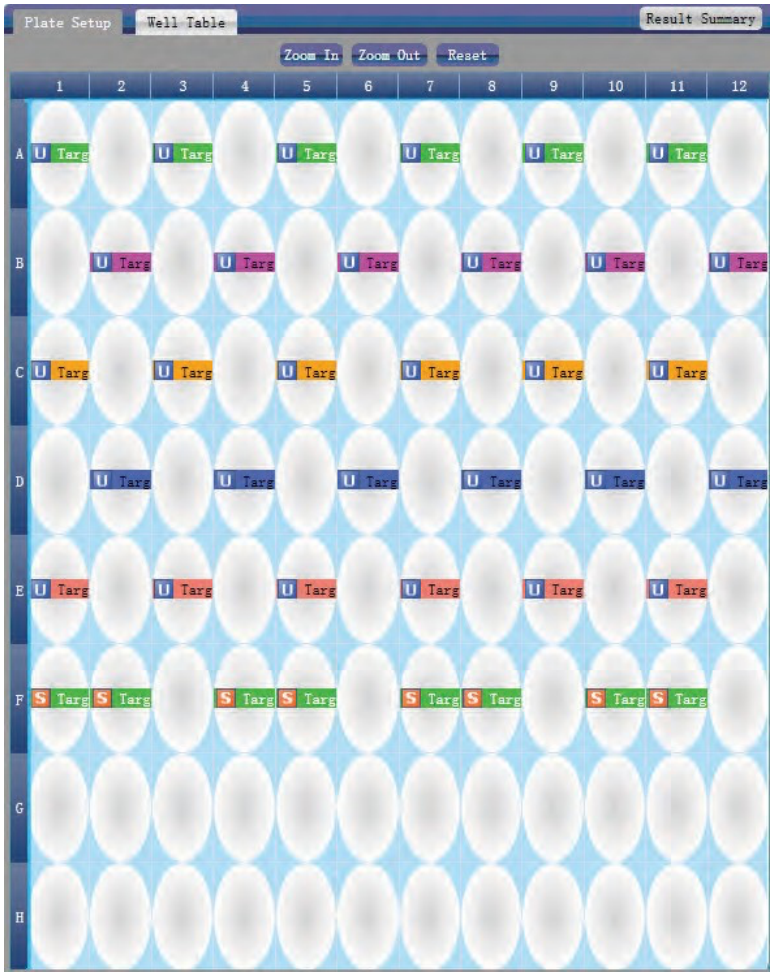
- Click Analysis ►Standard Curve



- Check standard curve
- Set up assay

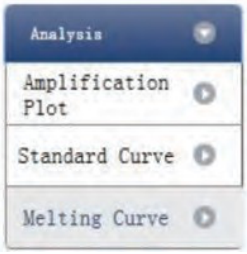


- Check the reaction plate
- Select reaction plate well site and check corresponding well site curve. The default is all wells are selected
- Zoom-In, Zoom-Out and reset the reaction plate
- Check well table information
- Check results summary

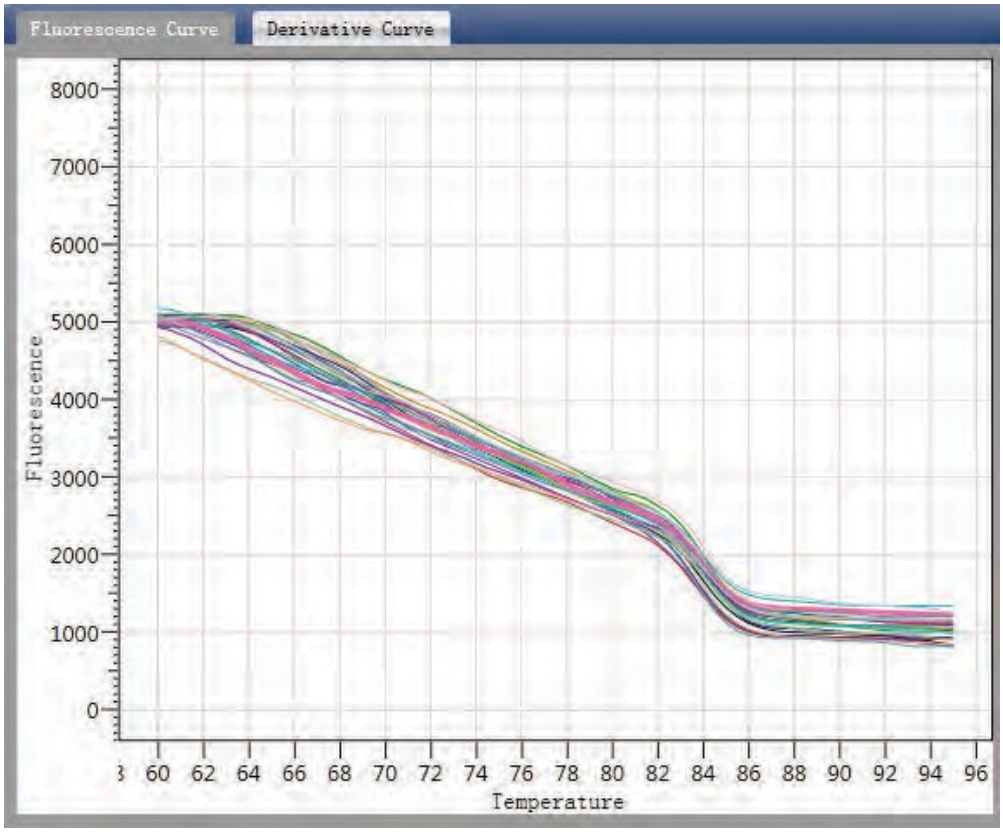


c) Check Melting Curve

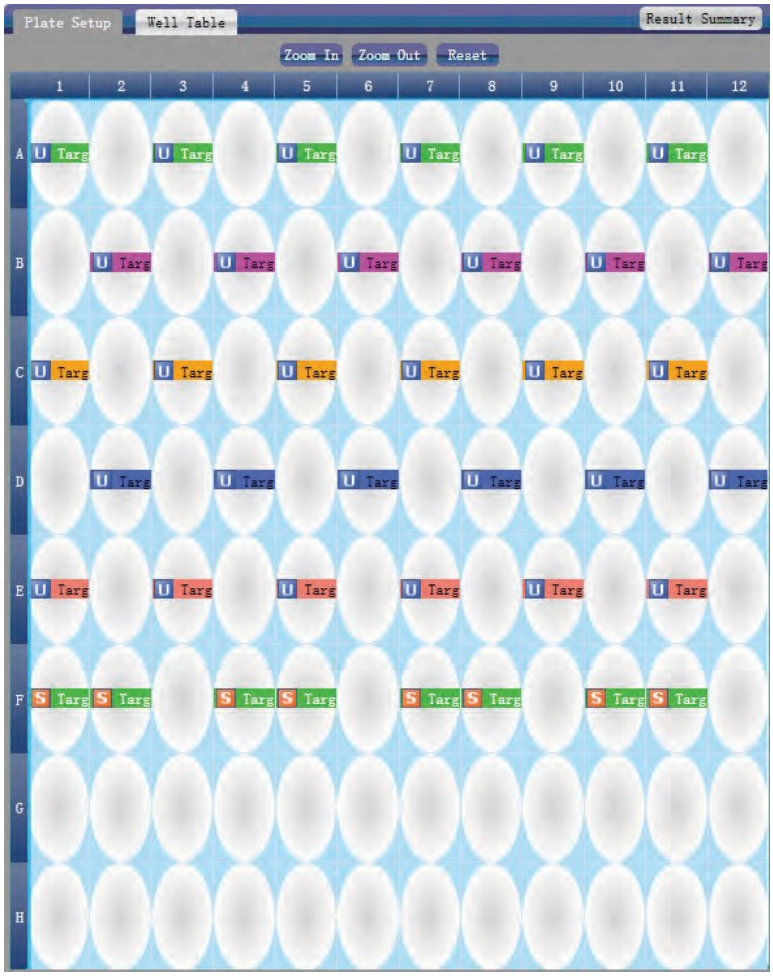
- Click Analysis ► Melting Curve



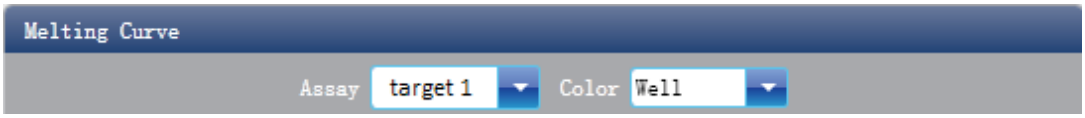
- Check the melting curve
- Check the fluorescence curve
- Check the derivative curve
- Set up color



- Check the reaction plate
- Select reaction plate well site and check corresponding well site curve. The default is all wells are selected
- Zoom-In, Zoom-Out and reset the reaction plate
- Check well table information
- Check results summary



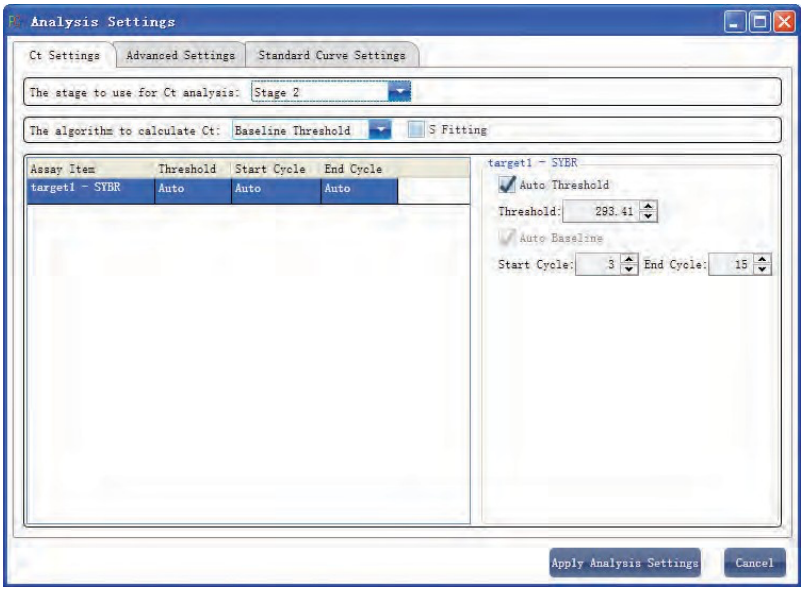
- Set up assay
- Set up color



5.4.2. Adjusting Parameters and Re-analysis

a) Click Analysis Settings ► the Analysis Settings dialog box will pop up

- Adjust the start cycle and end cycle of the baseline
- Adjust Ct analysis algorithm
- Set up the use of S fitting
- Set up the stage to use for Ct analysis
- Set up the automatic threshold value
- Advanced setting
- Standard curve setting



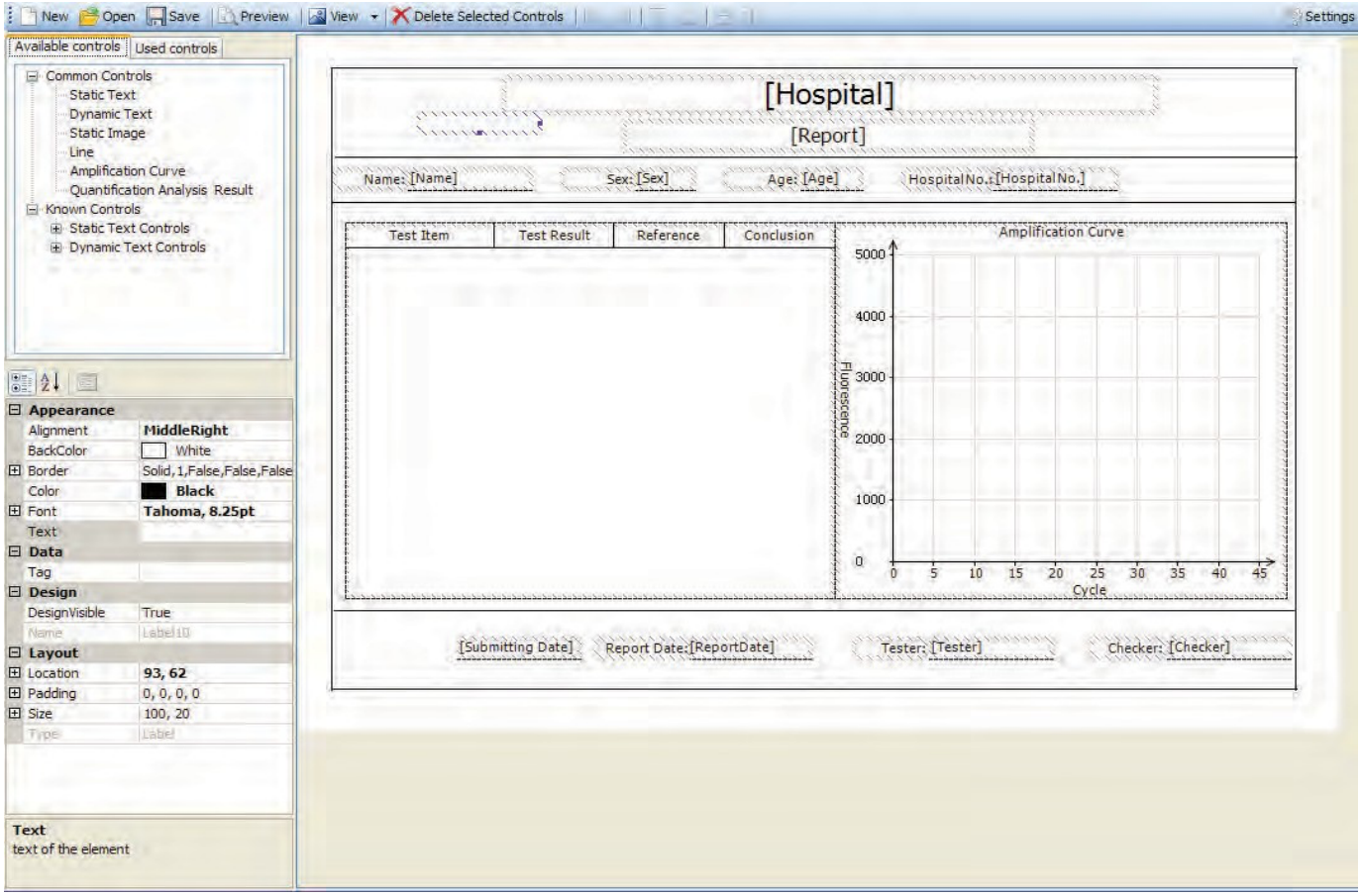
5 5 Experiment Report

This section describes how to print an experiment report and covers designing of a report template and print settings.

5.5.1. Designing a Report Template

Click Report ► Report Template Editor ► the Report Designer window will pop up.

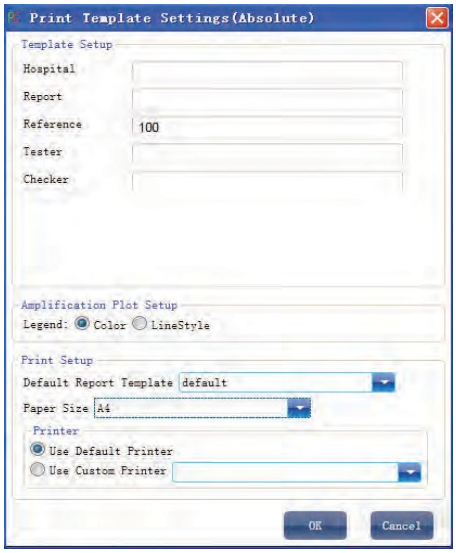
The report consists of controls and the user can add, modify and delete controls. Available controls include Static Text, Dynamic Text, Line, Static Image, Amplification curve and Quantification Analysis Results.



5.5.2. Print Setting

Click Report ► Print Template Setting ► the Print Template Setting window will open

The user can set up the laboratory name, report name, reference value, tester, checker, amplification plot, default report template and paper size.



5.5.3. Comprehensive Report

Click Report ► Consolidated Reports ► the Consolidated Report window will pop up

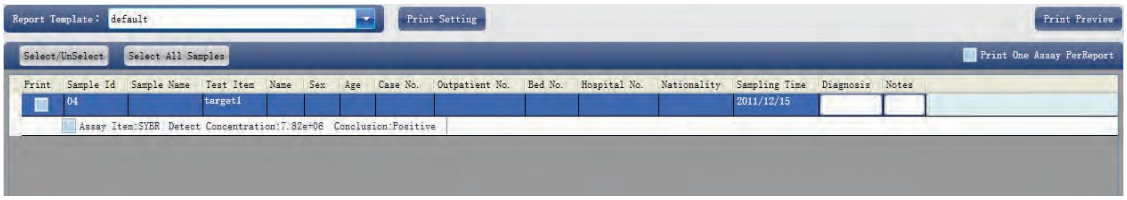
The Consolidated Report includes the basic information, sample information, amplification curve, standard curve, plate information, etc.

5.5.4. Report Printing

a) Click Report ► Report Print

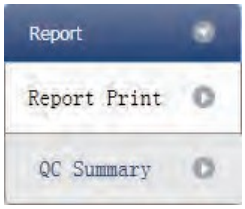
b) Report print setting

- Set up report template
- Print setting (please refer to 5.5.2)
- Select items to print
- Print preview
- Print the report

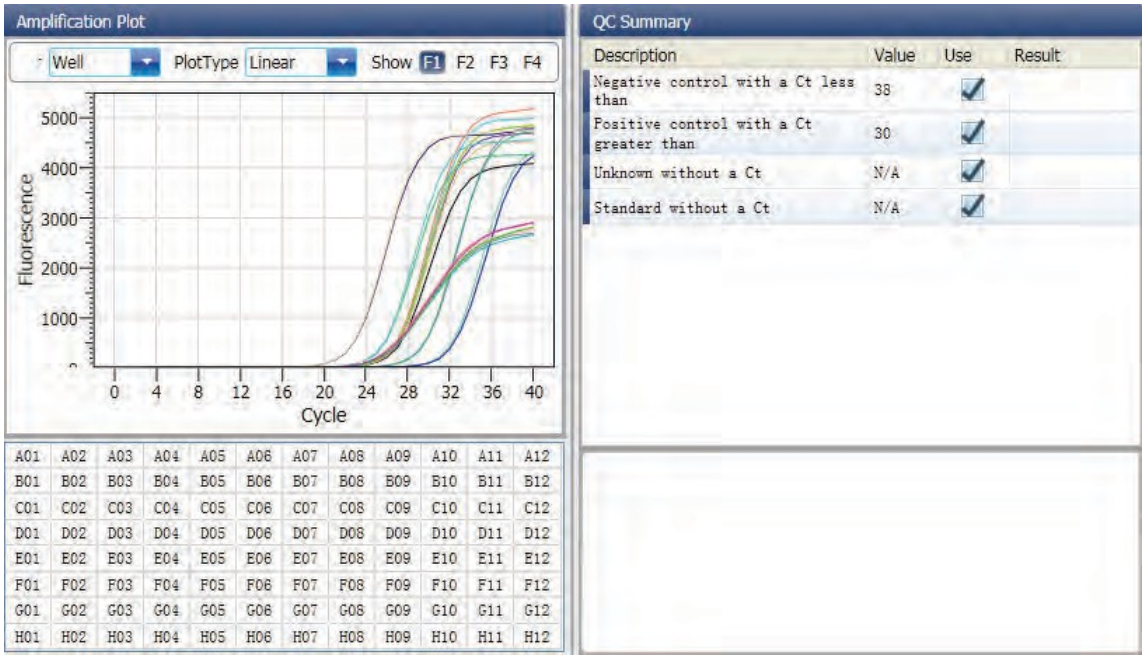


5.5.5. QC Summary

a) Click Report ► QC Summary



b) Check the QC summary



5 6 Data Export

This section describes how to export data and covers exporting to a database, Experiment Saving and exporting the experiment data to EXCEL.

5.6.1. Export to Database

Click Data Summary ► Export to Database ► the Save File dialog box will pop up ► save the exported database file

5.6.2. Experiment Saving

a) Click Data Summary ► Archived Experiment Directory ► the Experimental archive storage directory window will pop up ► set up the storage path of file.

b) Experiment Saving. Click Data Summary ► Archived Experiment ► export the saved experiment file. The suffix of the saved experiment file is.fqh

5.6.3. Export Experiment Data to EXCEL

Click Data Summary►Export Experiment ► Export Experiment to Excel ►the experiment data will generate EXCEL file

5.6.4. Export Experiment Data to TEXT

Click Data Summary►Export Experiment ► Export Experiment to Text► the exported experiment data will generate TEXT file

Chapter 6 Relative Quantitative

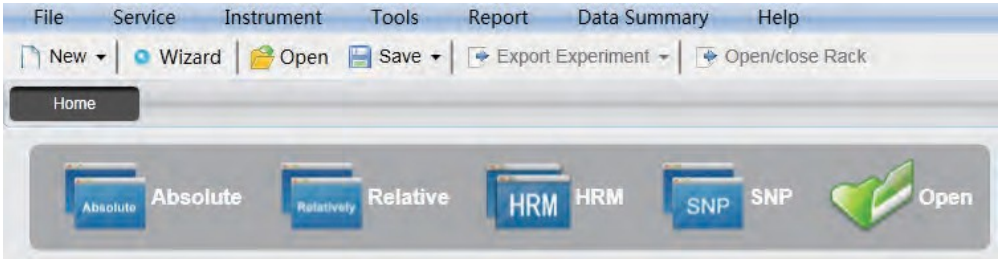
6 1 Design Experiment

This section describes how to design a relative quantitative experiment and covers creating new relative quantitative experiment, inspection item setting, sample information setting, reaction plate setting and Program Setting

6.1.1. Create New Relative Quantitative Experiment

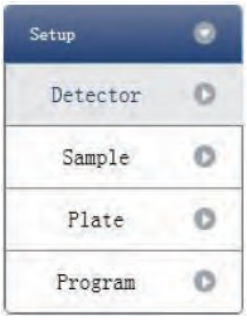
Click Relative on Home interface and create Relative Quantitative Experiment window. Relative quantitative experiment can be also created by:

- Clicking New ► Relative on the toolbar
- Clicking File ► New ► Relative on the menu bar



6.1.2. Detector Setting

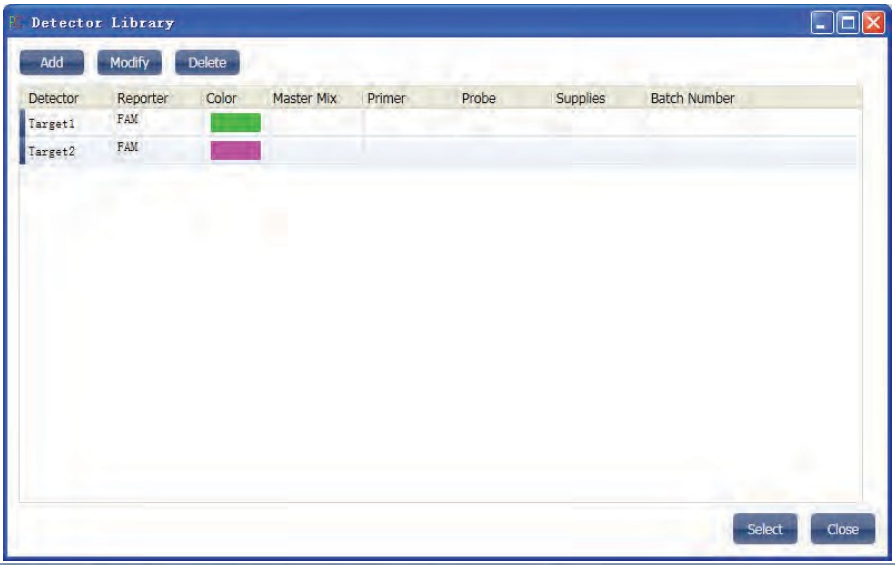
a) Click Setup ► Detector



b) Input Experiment Properties. Input the Experiment name, Username and Comment in the basic information column.

c) Inspection Item Setting

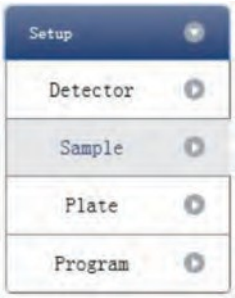
- Set up the Detector, Assay, Dye and Color.
- Add detector
- Delete detector
- Add detector from library. The user can also conduct Add, Modify and Delete operations in the item library.



d) Set up reference dye

6.1.3. Sample Information Setting

a) Click Setup ► Sample



b) Add sample information

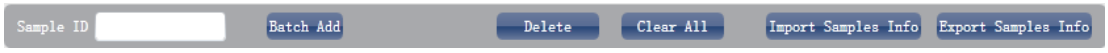
- Itemized addition: input ID in Sample ID ► press Enter ► add information for one sample.
- Batch addition: click Batch Add ►the Batch Add window will pop up

c) Delete sample information

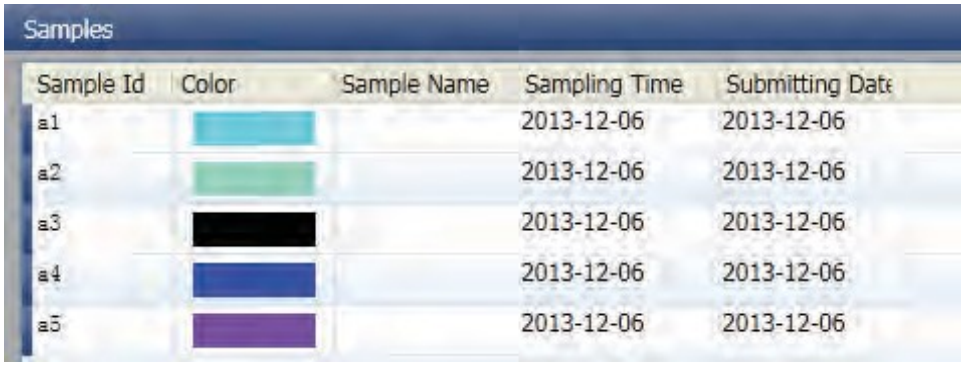
- Itemized deletion: select one sample ► click Delete ► delete the selected sample information
- Delete all: click Clear All ► delete all sample information

d) Import/Export sample information

- Click Import Sample Info ► the File Import window will pop up ► import sample information file in CSV format
- Click Export Sample Info ► the Save As window will pop up ► the sample information will be exported in CSV file format

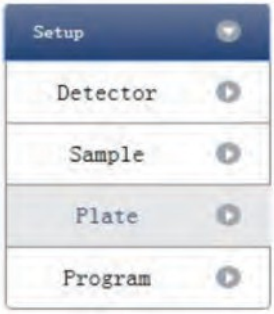


e) Set up sample information



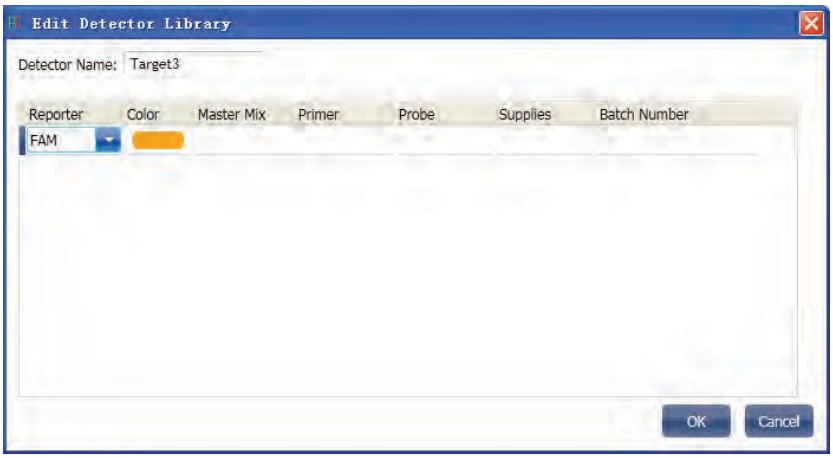
6.1.4. Reaction Plate Setting

a) Click Setup ► Plate



b) Set up the inspection criteria of the reaction plate

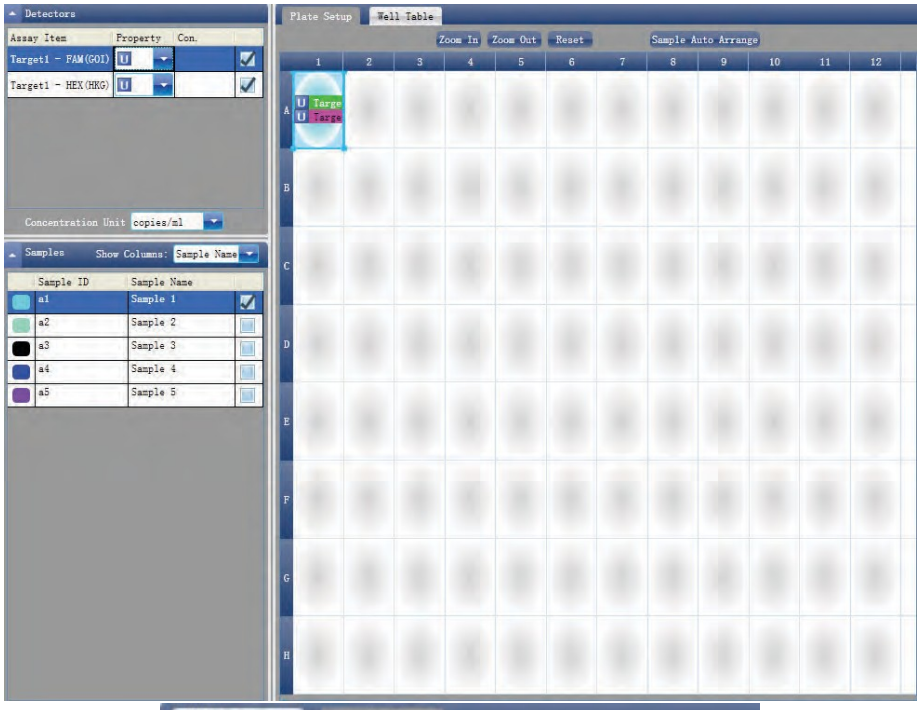
- Select reaction plate well site: click Reaction Plate well Site. The user can also right click the reaction plate well site to Copy, Paste and Add New Detector. Adding a new detector will open the Edit Detector Library window.

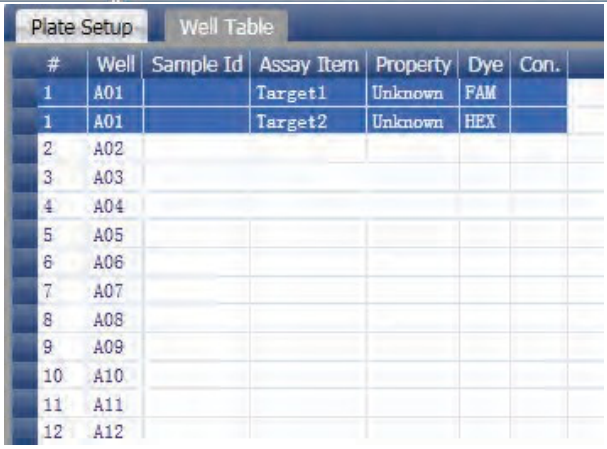


- Select inspection item and modify the property, concentration and concentration unit.

Property	Name	Concentration	Concentration unit
U	Unknown	NO	Copies/ml IU/ml Fg/ml Pg/ml
S	Standard	YES	
N	Negative	NO	

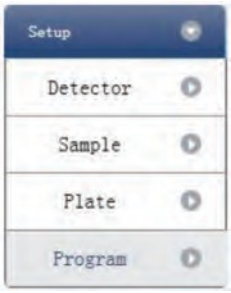
- Select a sample and the list displayed will change
- Zoom-In, Zoom-Out and reset the reaction plate.
- Sample Auto Arrange
- Check Well Table





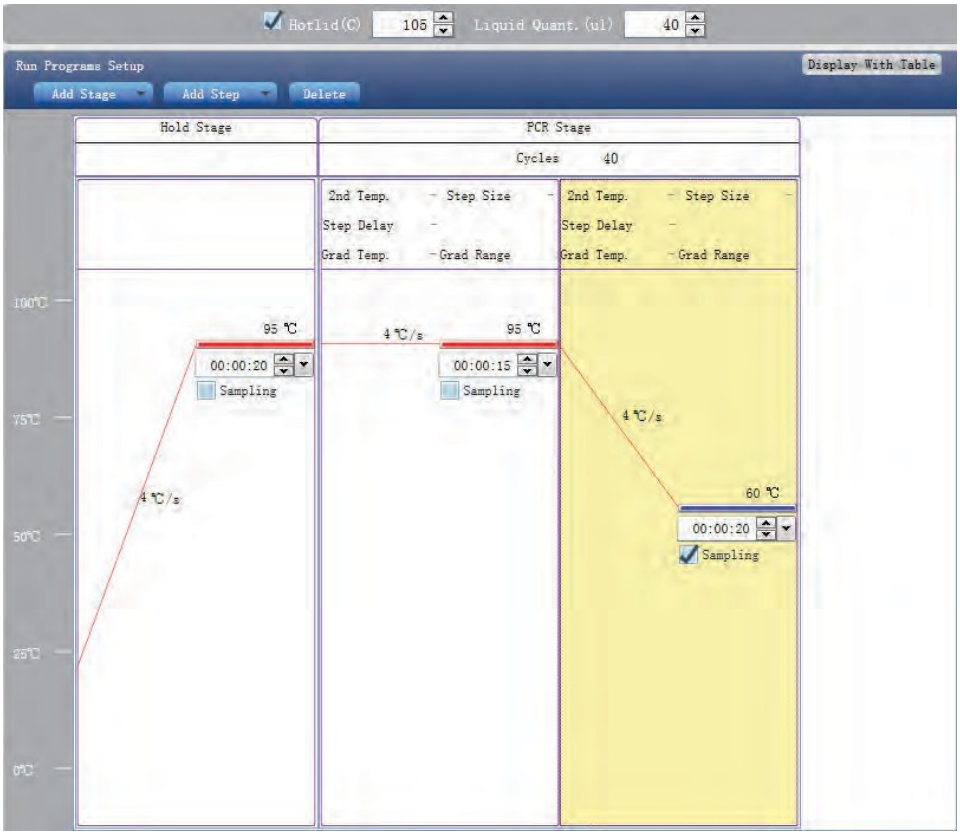
6.1.5. Program Setting

a) Click Setup ► Program



b) Run Program Setup

- Create new stage: the user can create a new Hold Stage, Cycling Stage or Melting Stage. The user can also click Add Stage directly and the default will be creating a new Cycling Stage.
- Create new step: the user can create a new step Before or After the currently selected step. The user can also click Add Step and the default will be adding a new Step at the end of the currently selected stage or after the currently selected step.
- Delete: the user can delete the currently selected step or stage
- Display form: click Display with Table ► new window will pop up ► the details of the current experiment will be displayed in a table.
- Set up the experimental data of the hold stage, cycling stage and melting stage melting section
- Set up the hot-lid temperature and liquid volume



6 2 Prepare for Reaction

The user should make full preparations prior to the experiment

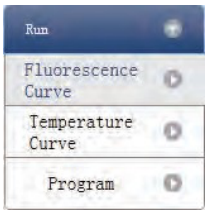
- Ensure appropriate materials are used.
- Ensure the arrangement of the PCR reaction plate is consistent with the setting layout of the reaction plate in Section 2.4.

6 3 Run the Experiment

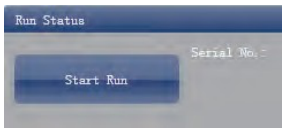
This section describes how to run/operate the experiment after loading the reaction plate and includes how to operate the fluorescence curve, the temperature curve and programming

6.3.1. Run Fluorescence Curve

a) Click Run ► Fluorescence Curve



b) Click Start Run



c) Operating confirmation. Modify hot-lid temperature and liquid quantity (sample volume)

d) After it starts running, the user can:

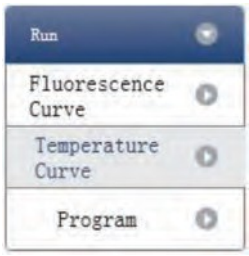
- Skip the current stage
- Add a cycle
- Delete a cycle
- Stop run

e) 5. Plot display setting

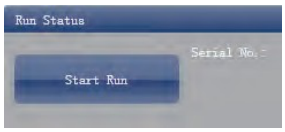
- Assay item
- Plot color

6.3.2. Run Temperature Curve

a) Click Run ► Temperature Curve



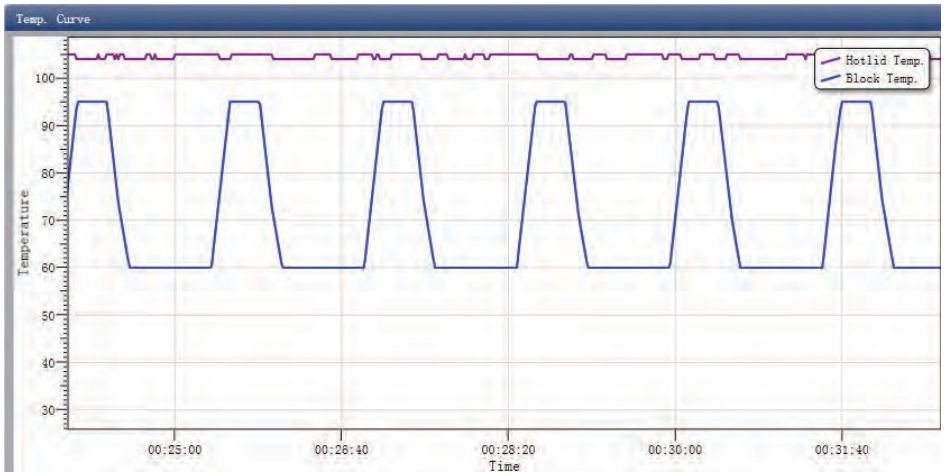
b) Click Run ► Start



c) Operating confirmation. Modify hot-lid temperature and liquid quantity (sample volume)

d) After it starts running, the user can:

- Skip the current stage
- Add a cycle
- Delete a cycle
- Stop run



6.3.3. Program Setting

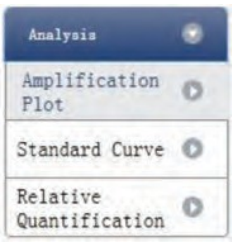
The user can only check the Program Setting but cannot make modifications.

6 4 Experiment Analysis

This section describes how to view the experiment analysis results after running an experiment and adjusting parameters for re-analysis.

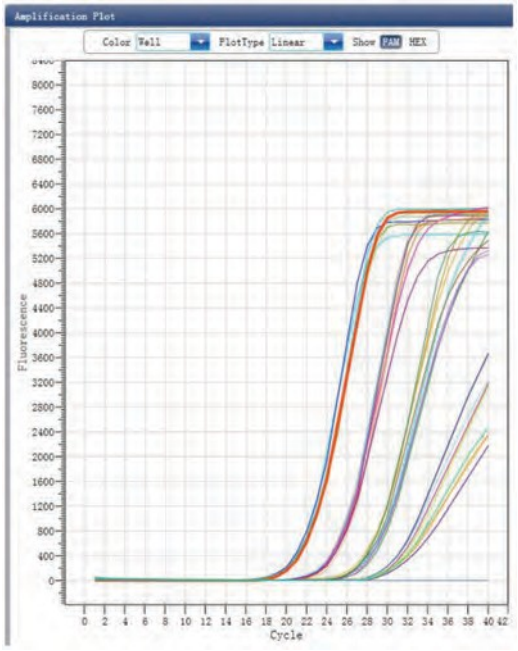
6.4.1. Check Results

a) Check the Amplification Plot. Click Analysis ► Amplification Plot



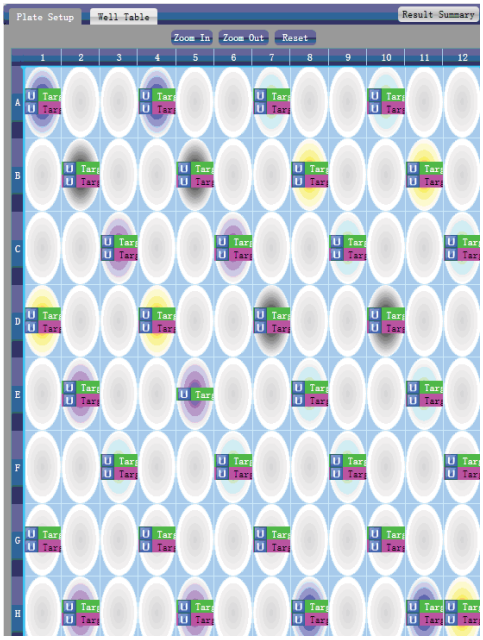
b) Check the amplification curve

- Set up color
- Set up plot type
- Set up show dye. When the background color of a dye name is blue, it will be displayed; while white indicates it will not be displayed.



c) Check the reaction plate

- Select reaction plate well site and check corresponding well site curve. The default is all wells are selected
- Zoom-In, Zoom-Out and reset the reaction plate
- Check well table
- Check results summary

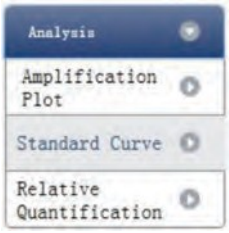


d) Set up assay

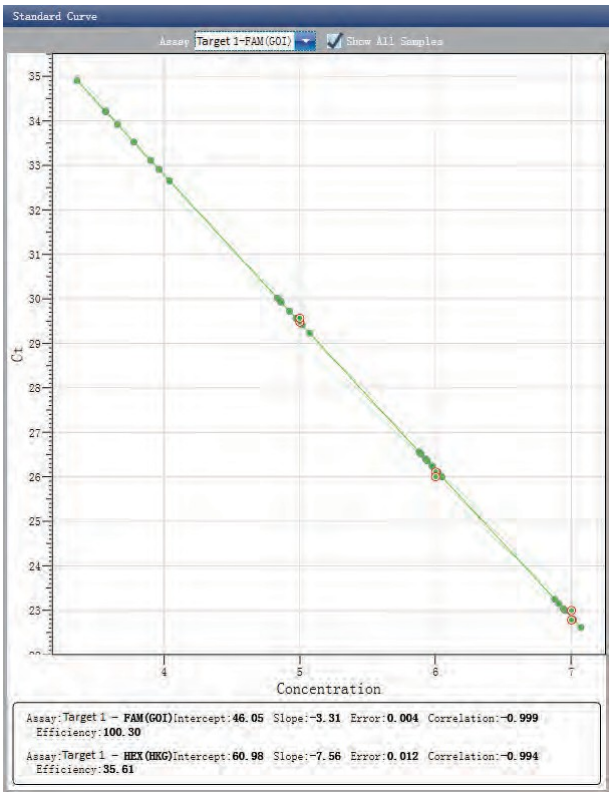
- Set up assay
- Set up threshold

- Set up automatic baseline. When the threshold value is not automatic, the user cannot set up the automatic Baseline

e) Check Standard Curve. Click Analysis ► Standard Curve

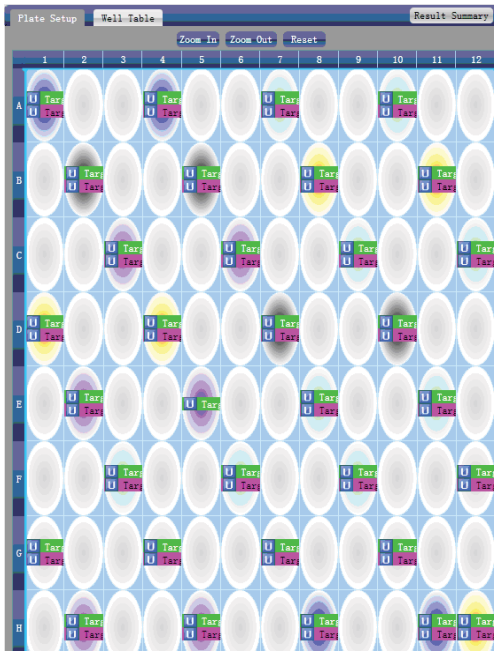


f) Check standard curve. Set up assay



g) Check the reaction plate

- Select reaction plate well site and check corresponding well site curve. The default is all wells are selected
- Zoom-In, Zoom-Out and reset the reaction plate
- Check well table
- Check results summary

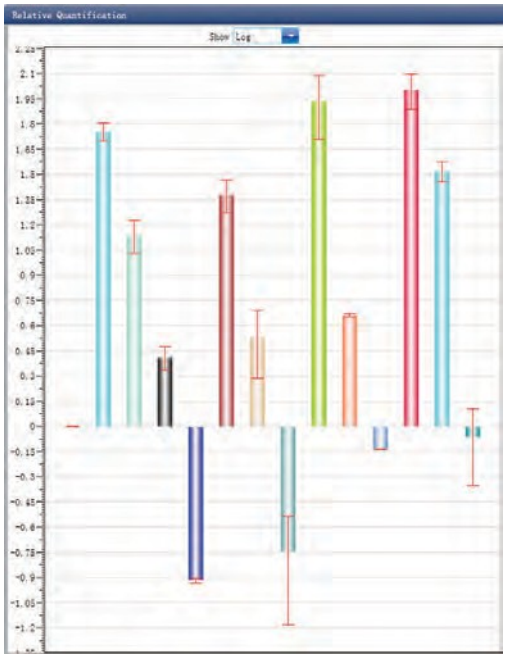


6.4.2. Check Relative Quantification.

a) Click Analysis ► Relative Quantification

b) Check relative quantitative

- Set up the show type



- Check the analysis results

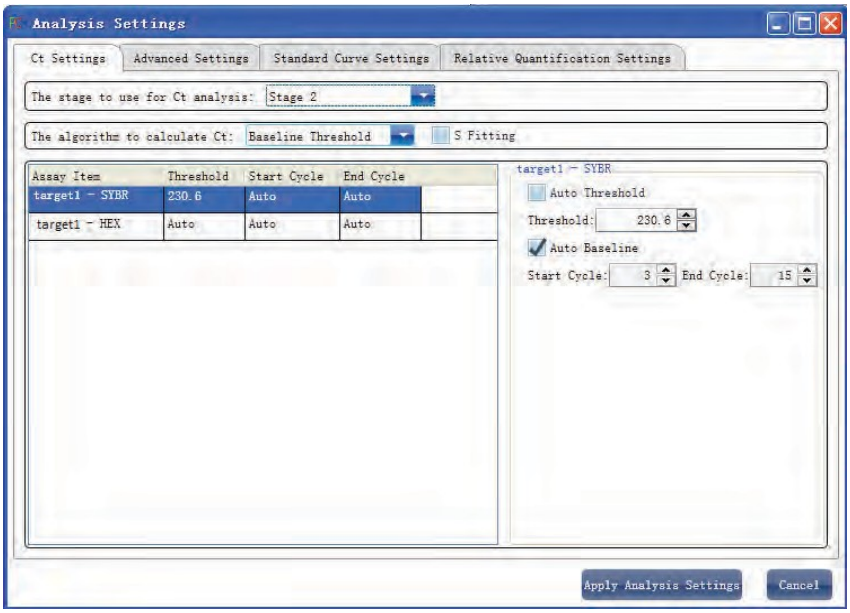
Result

Sample Id	Assay Item	Property	GOI Aver. Con.	GOI Con. SD	HKG Aver. Con.	HKG Con. SD	Max	Min	Aver.
	target1	Comparison	7.99e+03	0.00e+00	1.37e+04	0.00e+00	1	1	1
01	target1	Unknown	1.10e+07	1.05e+06	1.93e+05	1.48e+04	63.92	49.95	56.94
02	target1	Unknown	8.48e+05	1.31e+05	6.14e+04	9.61e+03	16.84	10.78	13.81
03	target1	Unknown	9.40e+04	1.40e+04	3.67e+04	2.06e+03	2.97	2.15	2.56
04	target1	Unknown	3.72e+03	2.66e+01	3.08e+04	8.82e+02	0.12	0.12	0.12
06	target1	Unknown	9.44e+05	1.43e+05	3.95e+04	6.33e+03	29.18	18.63	23.9
07	target1	Unknown	9.33e+04	3.53e+04	2.73e+04	5.86e+03	4.9	1.93	3.41
08	target1	Unknown	4.14e+03	2.62e+03	2.33e+04	8.42e+02	0.29	0.07	0.18
09	target1	Unknown	8.44e+06	5.34e+05	9.71e+04	3.93e+04	122.5	51.28	86.89
11	target1	Unknown	7.21e+04	1.20e+03	1.57e+04	2.97e+02	4.7	4.47	4.58
12	target1	Unknown	1.10e+04	0.00e+00	1.51e+04	0.00e+00	0.73	0.73	0.73
13	target1	Unknown	8.12e+06	8.33e+05	8.05e+04	1.74e+04	125.02	76.77	100.89
14	target1	Unknown	8.25e+05	6.25e+04	2.50e+04	2.87e+03	37.59	28.5	33.05
16	target1	Unknown	6.87e+03	3.28e+03	8.01e+03	4.28e+02	1.27	0.45	0.86

6.4.3. Adjust Parameter Reanalysis

Click Analysis Settings ► the Analysis Settings dialog box will pop up

- Adjust the start cycle and end cycle of the baseline
- Adjust Ct analysis algorithm
- Set up the use of S fitting
- Set up the stage to use for Ct analysis
- Set up the automatic threshold value
- Advanced setting
- Standard curve setting
- Relative quantification setting



6 5 Experiment Report

This section describes how to print experiment report and covers report template designing and print setting.

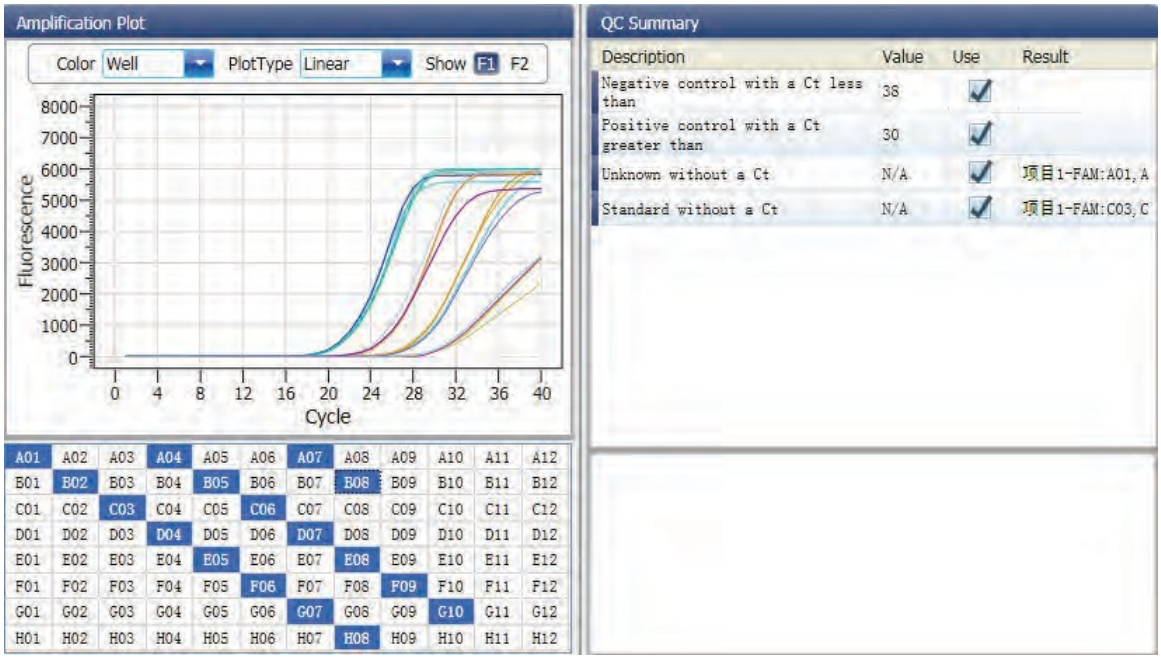
6.5.1. Comprehensive Report

Click Report ► Consolidated Reports ► the Consolidated Report window will pop up. The Consolidated Report includes the basic information, sample information, amplification curve, standard curve, plate information, etc.

6.5.2. QC Summary

a) Click Report ► QC Summary

b) Check the QC summary



6 6 Data Export

This section describes how to export data and covers exporting to a database, Experiment Saving and exporting the experiment data to EXCEL

6.6.1. Export to Database

Click Data Summary ► Export to Database ► the Save File dialog box will pop up ► save the exported database file

6.6.2. Experiment Saving

a) Click Data Summary ► Archived Experiment Directory ► the Experimental archive storage directory window will pop up ► set up the storage path of file

b) Experiment Saving. Click Data Summary ► Archived Experiment ► export the saved experiment file

The suffix of the saved experiment file is.fqh

6.6.3. Export Experiment Data to EXCEL

Click Data Summary►Export Experiment ► Export Experiment to Excel ►the exported experiment data will generate EXCEL file

6.6.4. Export Experiment Data to TEXT

Click Data Summary►Export Experiment ► Export Experiment to Text► the exported experiment data will generate TEXT file

Chapter 7 SNP

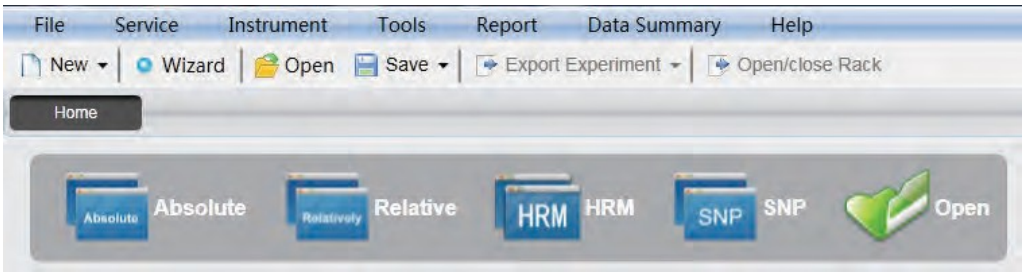
7 1 Design Experiment

This section describes how to design an SNP experiment and covers creating a new SNP experiment, inspection item setting, sample information setting, reaction plate setting and Program Setting.

7.1.1. Create SNP Experiment

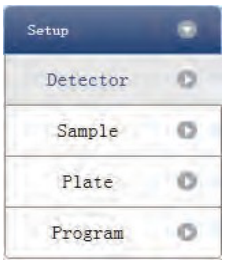
Click SNP on Home interface and create SNP Experiment window. An SNP experiment can be also created by:

- Clicking New ► SNP on the toolbar
- Clicking File ► New ► SNP on the menu bar



7.1.2. Detector Setting

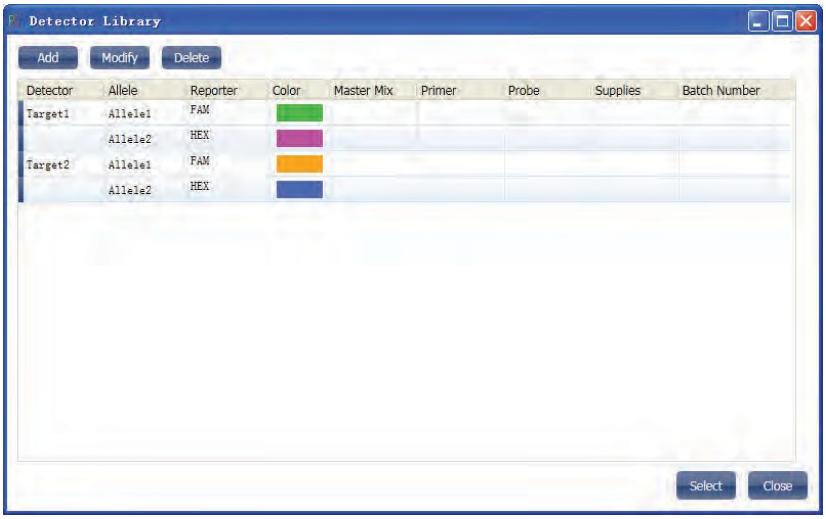
a) Click Setup ► Detector



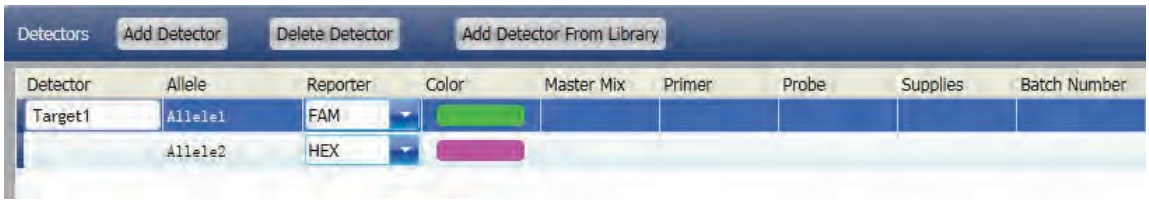
b) Input basic information. Input the experiment name, username and any comments in the experiment properties column.

c) Inspection Item Setting. Set up the Detector, Allele, Dye and Color. If necessary, the user can also:

- Add Detector
- Delete Detector
- Add the Detector in the Detector library: click Add Detector from Library ► the Detector Library window will pop up ► select the Detector on the window to be added. The user can also conduct Add, Modify and Delete operations in the item library.



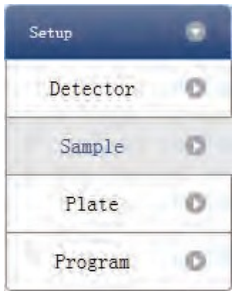
- Set up the item name, set up the dye name and set up the color



d) Set up reference dye

7.1.3. Sample Information Setting

a) Click Setup ► Sample



b) Add sample information

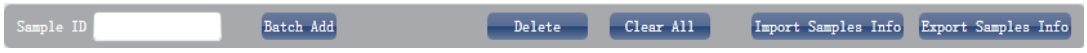
- Itemized addition: input ID in Sample ID ► press Enter ► add information for one sample
- Batch addition: click Batch Add ► the Batch Add window will pop up

c) Delete sample information

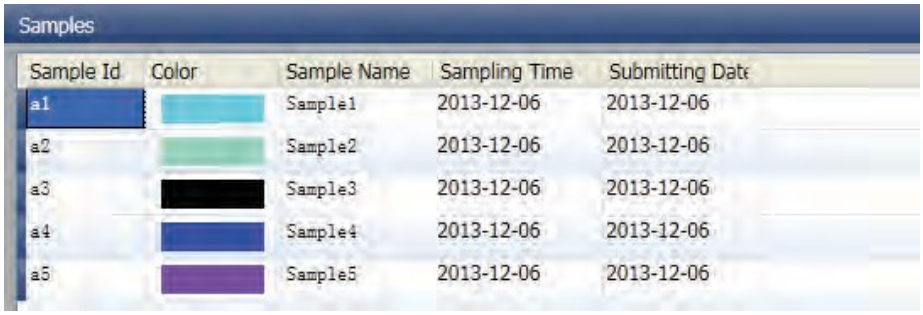
- Itemized deletion: select one sample ► click Delete ► delete the selected sample information
- Delete all: click Clear All ► delete all sample information

d) Import/Export sample information

- Click Import Sample Info ► the File Import window will pop up ► import sample information file in CSV format
- Click Export Sample Info ► the Save As window will pop up ► the sample information will be exported in CSV file format

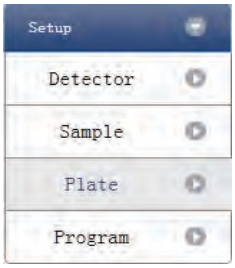


e) Set up sample information



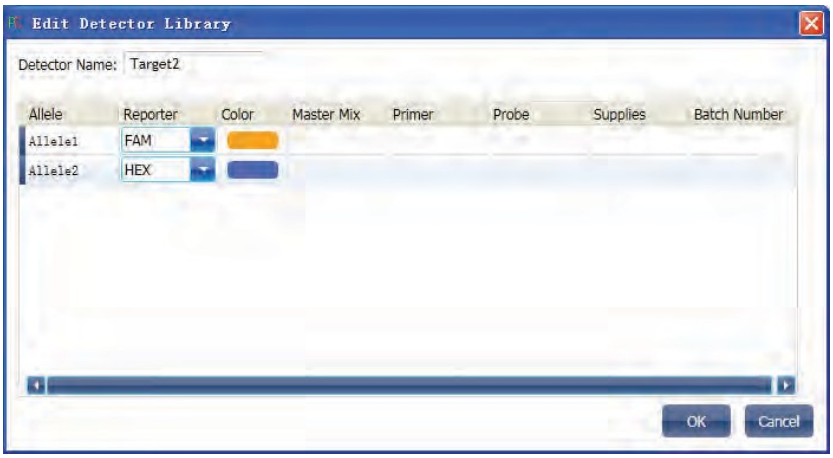
7.1.4. Reaction Plate Setting

a) Click Setup ► Plate



b) Set up the inspection criteria of the reaction plate

- Select reaction plate well site: click Reaction Plate well Site. The user can also right click the reaction plate well site to Copy, Paste and Add New Detector. Adding a new detector will open the Edit Detector Library window.

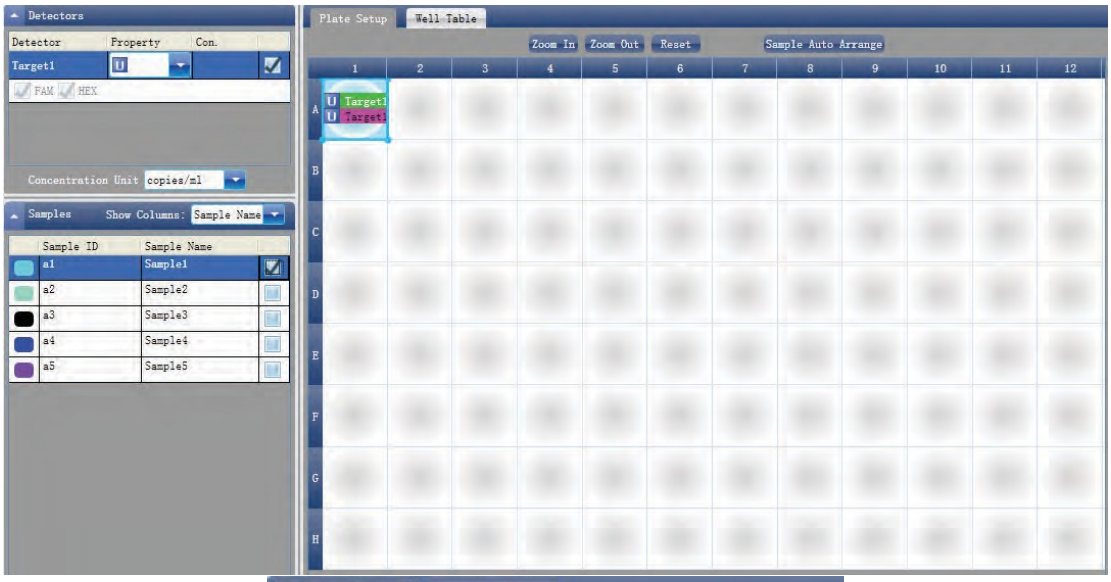


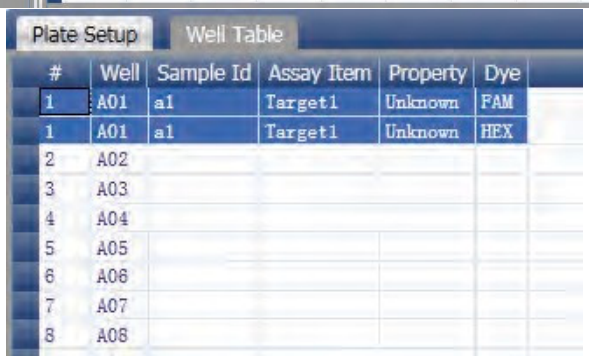
- Select inspection item and modify the property, concentration and concentration unit.

Property	Name	Concentration	Concentration unit
	Unknown	NO	Copies/ml IU/ml Fg/ml Pg/ml
	Negative	NO	
	Positive Allelic gene 1	NO	
	Positive Heterozygous	NO	
	Positive Allelic gene 2	NO	

- Select a sample and the list displayed will change
- Zoom-In, Zoom-Out and reset the reaction plate.
- Sample Auto Arrange

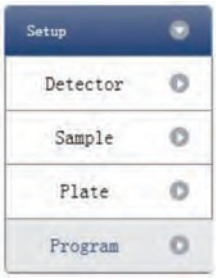
c) Check Well Table





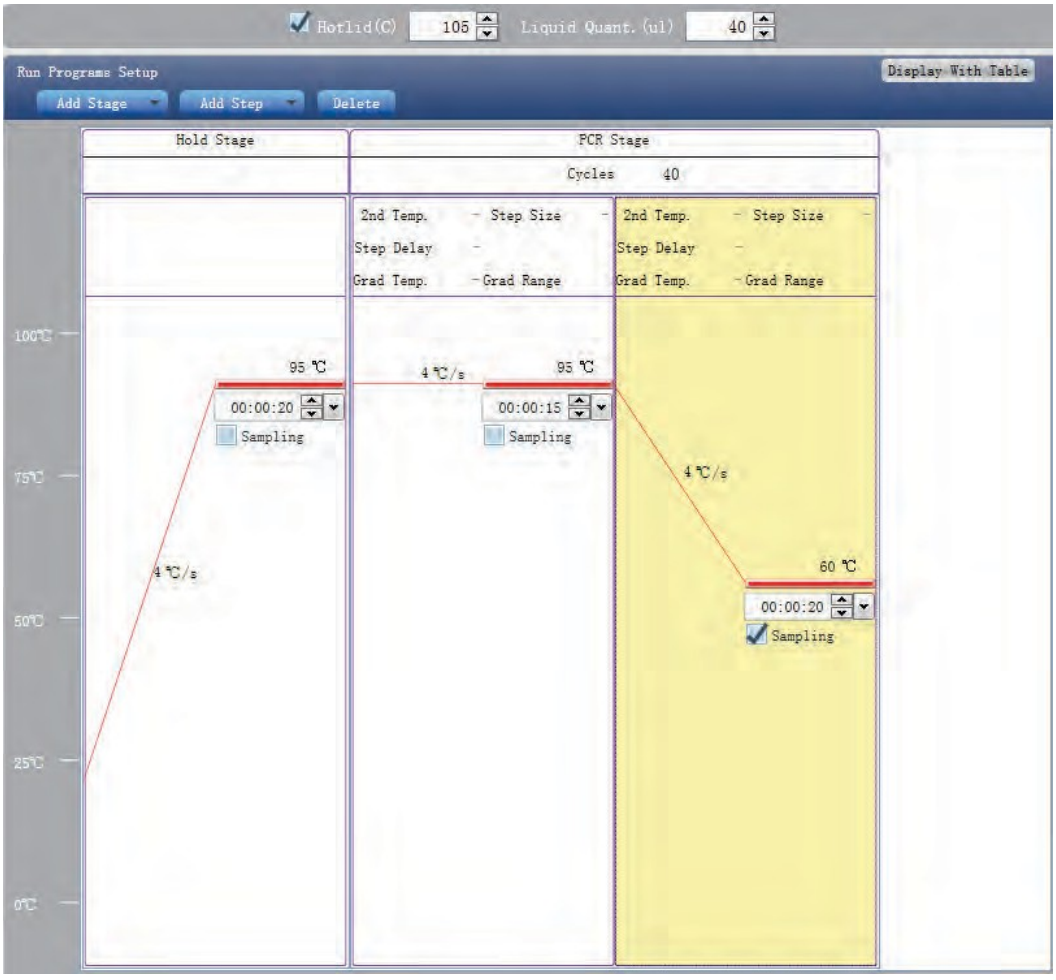
7.1.5. Program Setting

a) Click Setup ► Program



b) Run Program Setup

- Create new stage: the user can create a new Hold Stage, Cycling Stage or Melting Stage. The user can also click Add Stage directly and the default will be creating a new Cycling Stage.
- Create new step: the user can create a new step Before or After the currently selected step. The user can also click Add Step and the default will be adding a new Step at the end of the currently selected stage or after the currently selected step.
- Delete: the user can delete the currently selected step or stage
- Display form: click Display with Table ► new window will pop up ► the details of the current experiment will be displayed in a table.
- Set up the experimental data of the hold stage, cycling stage and melting stage melting section
- Set up the hot-lid temperature and liquid volume



7 2 Prepare for Reaction

The user should make full preparations prior to the experiment:

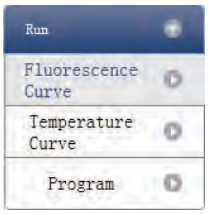
- Ensure appropriate materials are used.
- Ensure the arrangement of the PCR reaction plate is consistent with the setting layout of reaction plate in Section 2.4.

7 3 Run the Experiment

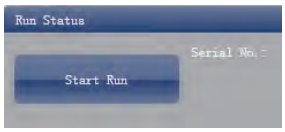
This section describes how to run/operate the experiment after loading the reaction plate and includes how to operate the fluorescence curve, the temperature curve and programming

7.3.1. Run Fluorescence Curve

a) Click Run ► Fluorescence Curve



b) Click Start Run



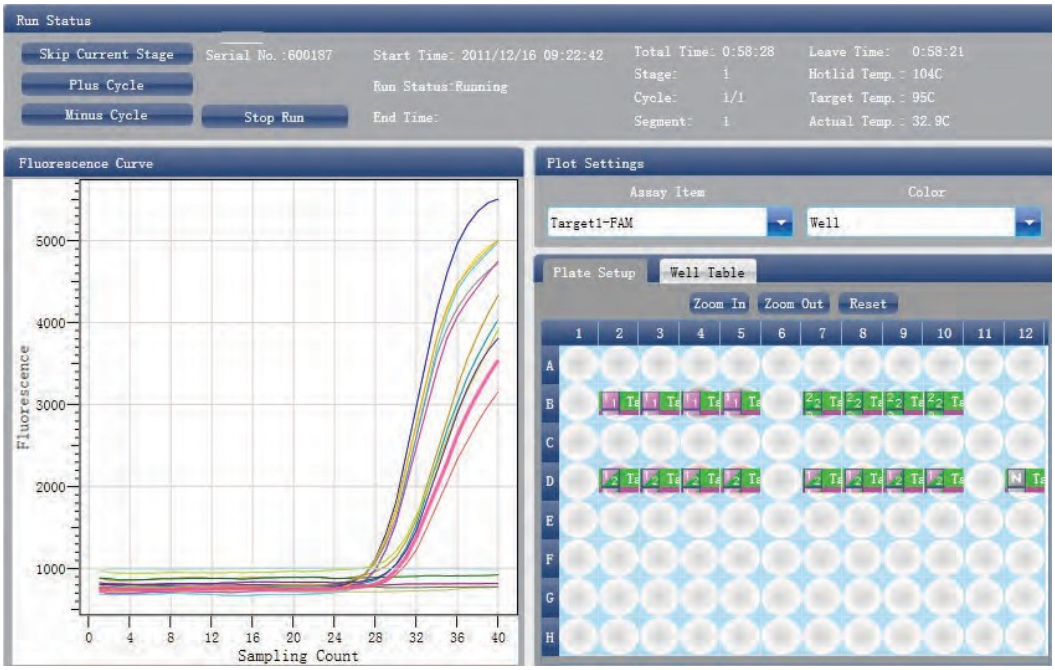
c) Operating confirmation. Modify hot-lid temperature and liquid quantity (sample volume).

d) After it starts running, the user can:

- Skip the current stage
- Add a cycle
- Delete a cycle
- Stop run

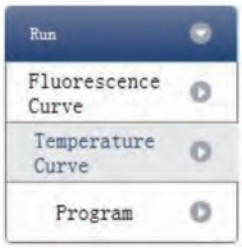
e) Plot display setting

- Assay item
- Plot color

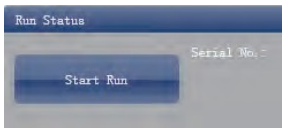


7.3.2. Run Temperature Curve

a) Click Run ► Temperature Curve



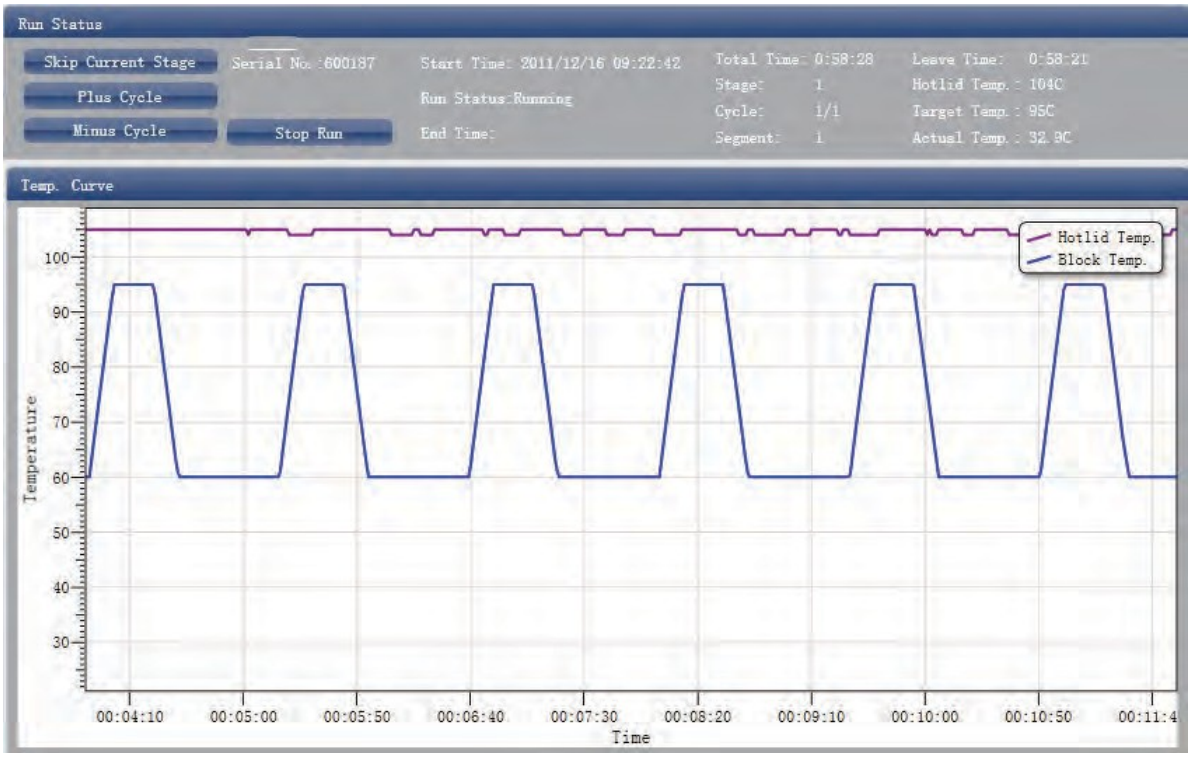
b) Click Start Run



c) Operating confirmation. Modify hot-lid temperature and liquid quantity (sample volume).

d) After it starts running, the user can:

- Skip the current stage
- Add a cycle
- Delete a cycle
- Stop run



7.3.3. Program Setting

The user can only check the Program Setting but cannot make modifications.

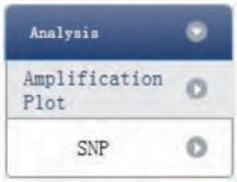
7 4 Experiment Analysis

This section covers the analysis of amplification curves and standard curves, adjusting parameters for re-analysis and importing parameters.

7.4.1. Check Results

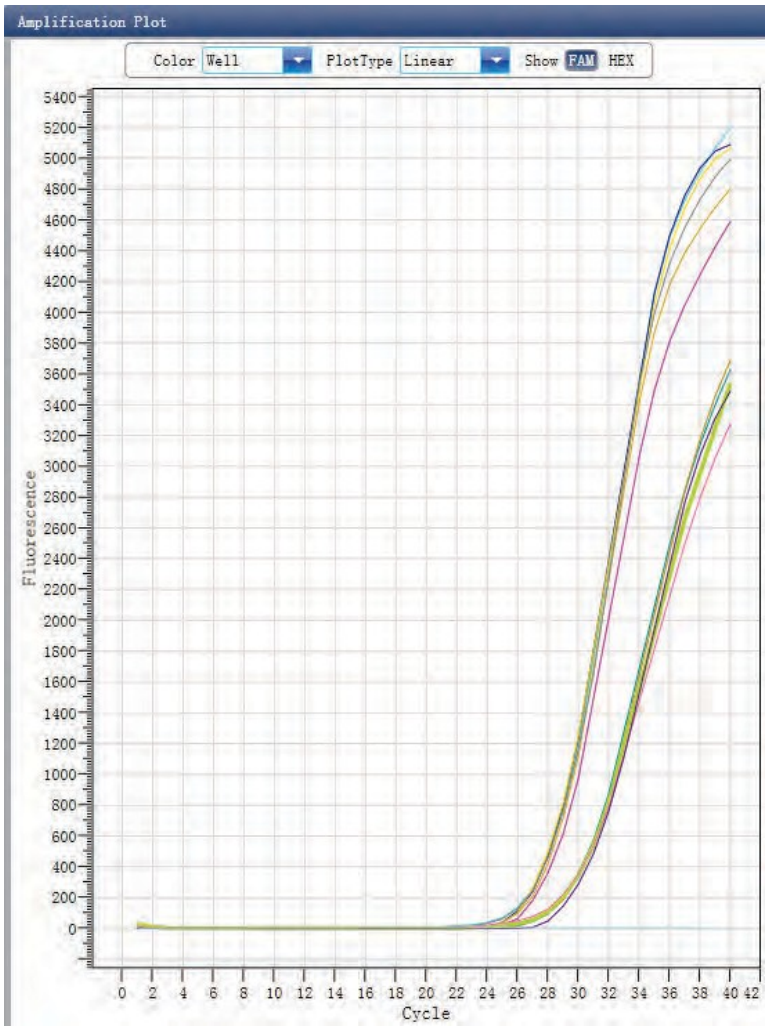
a) Check the Amplification Plot

- Click Analysis ► Amplification Plot



b) Check the amplification curve

- a. Set up color
- b. Set up plot type
- c. Set up show dye. When the background color of a dye name is blue, it will be displayed; while white indicates it will not be displayed.



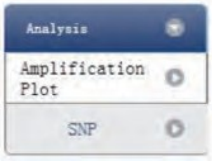
c) Check the reaction plate

- Select reaction plate well site and check corresponding well site curve. The default is all wells are selected
- Zoom-In, Zoom-Out and reset the reaction plate
- Check well table
- Check results summary

d) Set up inspection item

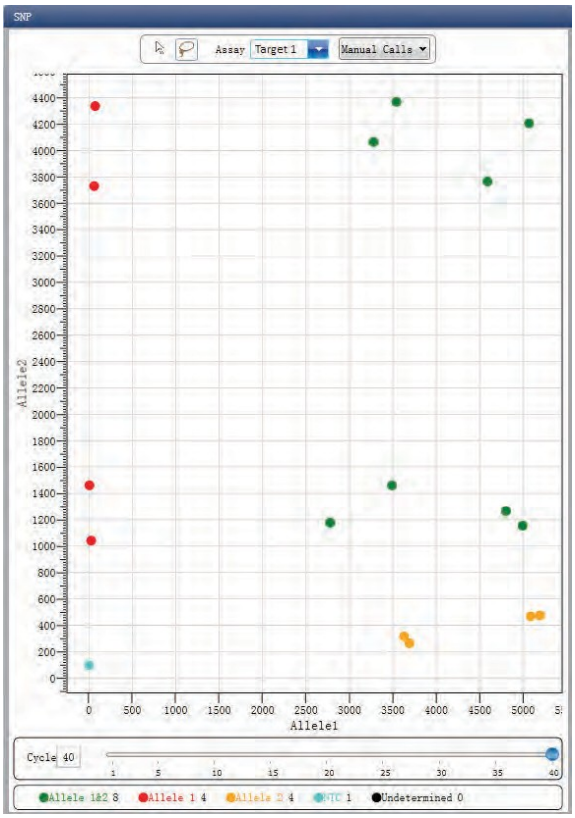
- Set up assay
- Set up threshold
- Set up automatic baseline. When the threshold value is not automatic, the user cannot set up the automatic baseline

e) Check SNP. Click Analysis ► SNP



Check SNP

- Select well site. The user can select well site by dragging a rectangle with the mouse around the wells of interest or select wells one by one.
- Set up Assay
- Set up manual calls



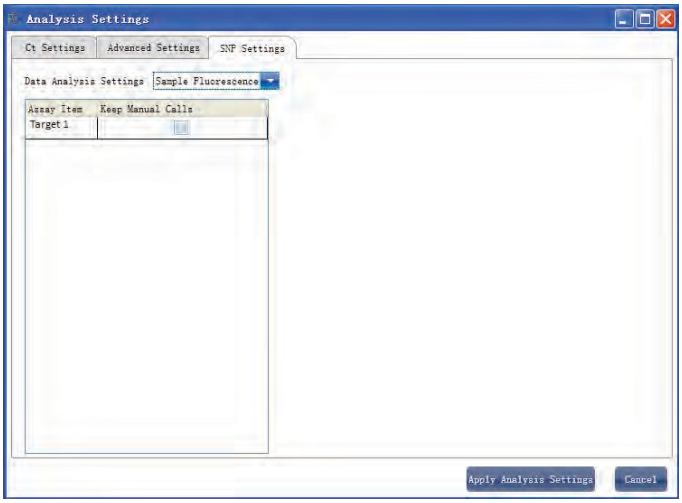
f) Check the reaction plate

- Select reaction plate well site and check corresponding well site curve. The default is all wells are selected
- Zoom-In, Zoom-Out and reset the reaction plate
- Check well table information
- Check results summary

7.4.2. Adjust Parameter Re-analysis

Click Analysis Settings ► the Analysis Settings dialog box will pop up

- Adjust analysis data
- Adjust whether the inspection item will retain manual recognition genotype



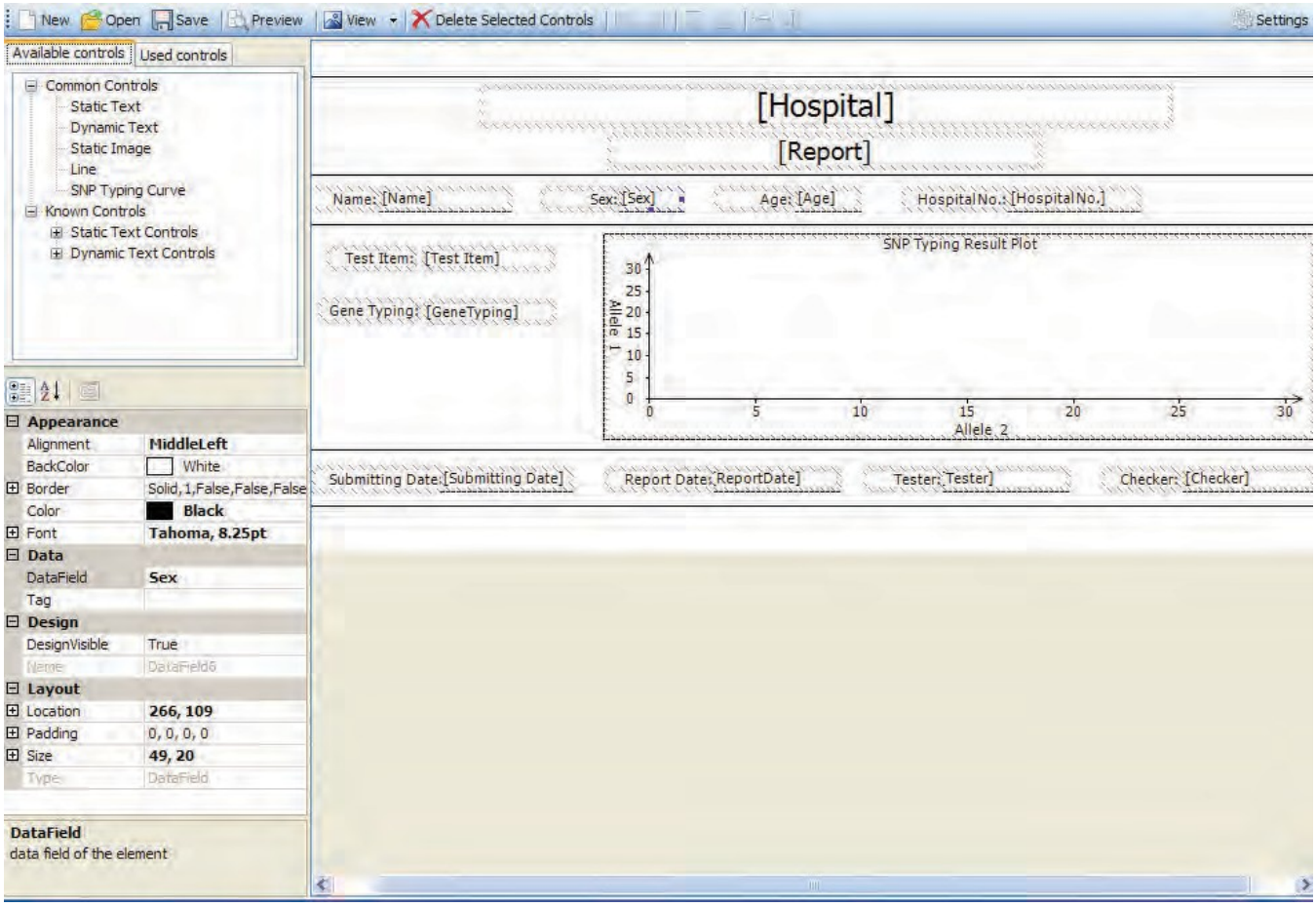
7 5 Experiment Report

This section describes how to print an experiment report and covers designing of a report template and print setting.

7.5.1. Designing a Report Template

Click Report ► Report Template Editor ► the Report Designer window will pop up

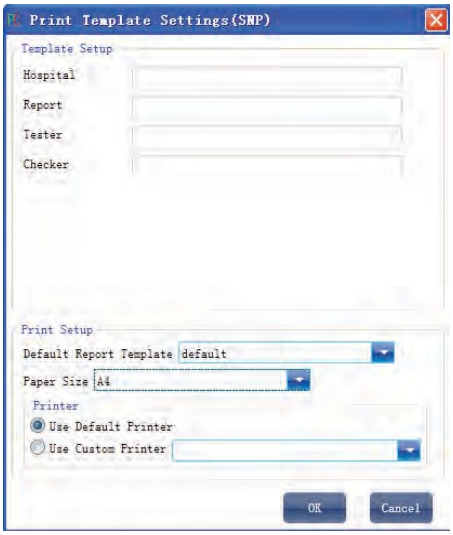
The report consists of controls and the user can add, modify and delete controls. Available controls include Static Text, Dynamic Text, Line, Static Image and SNP Typing Curve.



7.5.2. Print Setting

Click Report ► Print Template Setting ► the Print Template Setting window will pop up

The user can set up the laboratory name, report name, reference value, tester, checker, amplification plot set up, default report template and paper size.



7.5.3. Comprehensive Report

Click Report ► Consolidated Reports ► the Consolidated Report window will pop up.

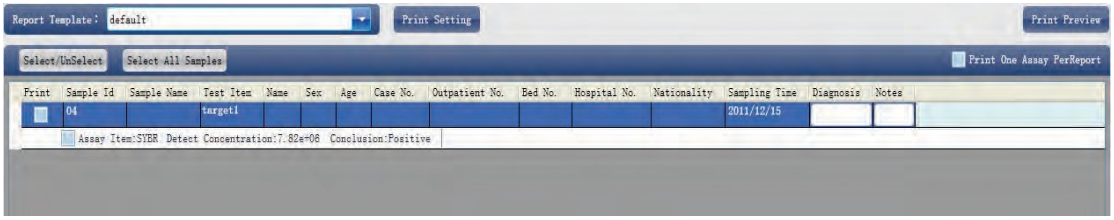
The Consolidated Report includes the basic information, sample information, amplification curve, SNP, plate information, etc.

7.5.4. Report Printing

a) Click Report ► Report Print

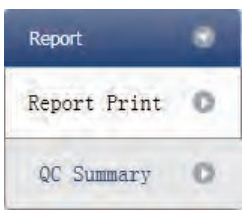
b) Report print setting

- Set up report template
- Print setting (please refer to Section 5.2)
- Select print items
- Print preview
- Print the report

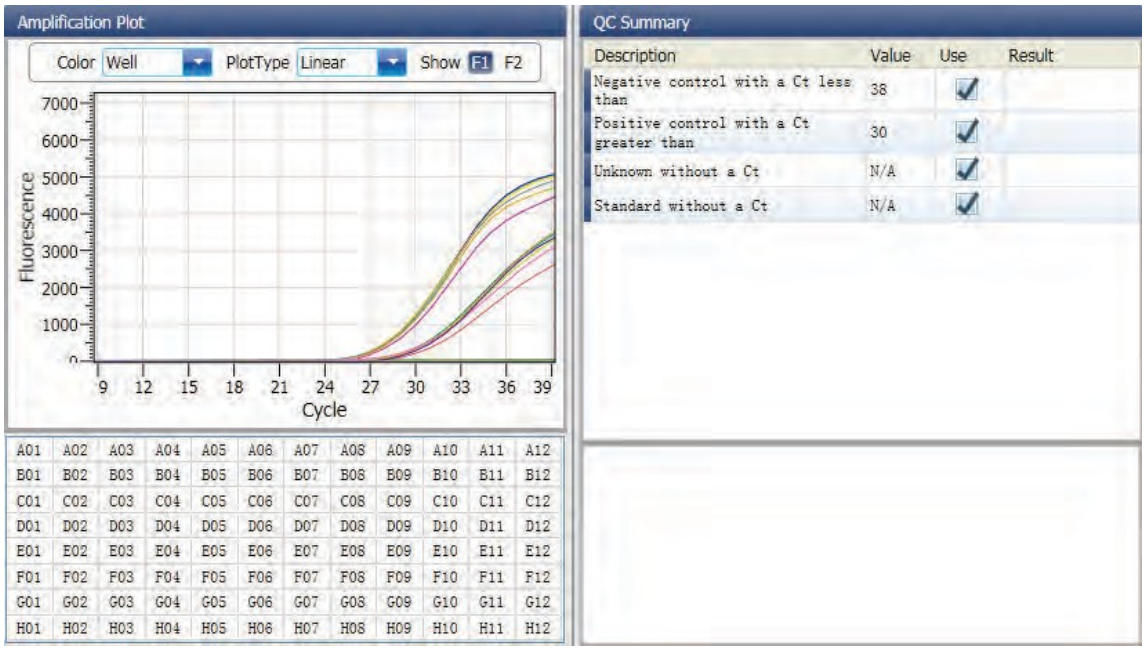


7.5.5. QC Summary

a) Click Report ► QC Summary



b) Check the QC summary



7 6 Data Export

This section describes how to export data and covers exporting to a database, Experiment Saving and exporting the experiment data to EXCEL.

7.6.1. Export to Database

Click Data Summary ► Export to Database ► the Save File dialog box will pop up ► save the exported database file

7.6.2. Experiment Saving

a) Click Data Summary ► Archived Experiment Directory ► the Experimental archive storage directory window will pop up ► set up the storage path of file

b) Experiment Saving. Click Data Summary ► Archived Experiment ► export the saved experiment file

The suffix of saved experiment file is.fqh

7.6.3. Export Experiment Data to EXCEL

Click Data Summary►Export Experiment ► Export Experiment to Excel ►the experiment data will generate EXCEL file.

7.6.4. Export Experiment Data to TEXT

Click Data Summary►Export Experiment ► Export Experiment to Text► the exported experiment data will generate TEXT file.

Chapter 8 High Resolution Melting

8 1 Design Experiment

This section describes how to design an SNP experiment and covers creating a new SNP experiment, inspection item setting, sample information setting, reaction plate setting and Program Setting.

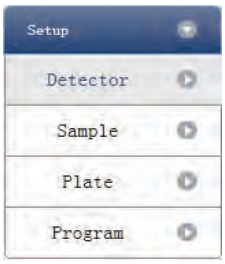
8.1.1. Create High Resolution Melting Experiment

Click HRM on Home interface and create SNP Experiment window. An SNP experiment can be also created by:

- Clicking New ► HRM on the toolbar
- Clicking File ► New ► HRM on the menu bar

8.1.2. Detector Setting

a) Click Setup ► Detector

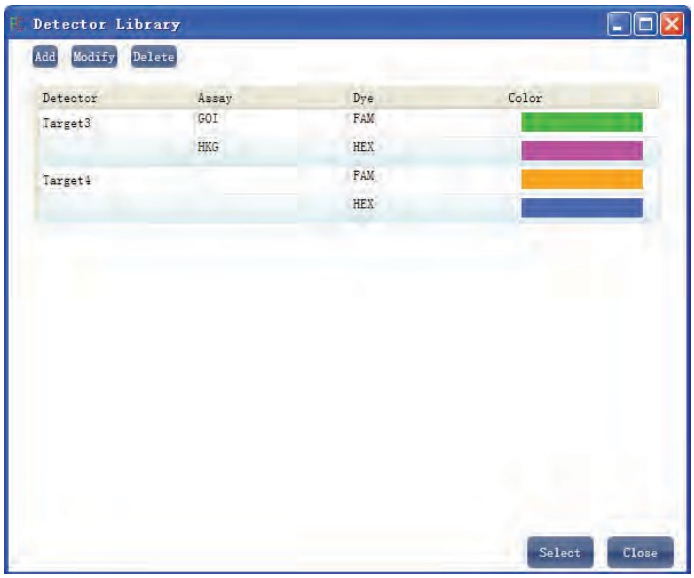


b) Input basic information. Input the experiment name, user name and any comments in the experiment properties column.

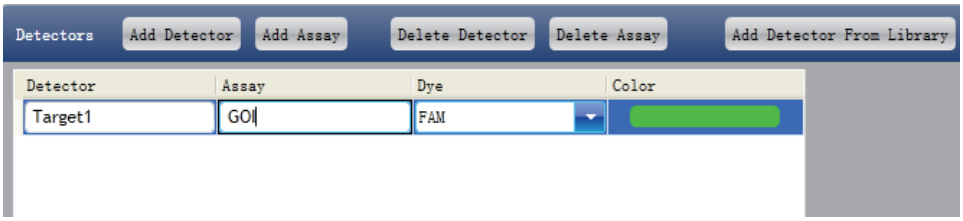
c) Inspection Item Setting. Set up the Detector, Allele, Dye and Color. If necessary, the user can also:

- Add Detector
- Delete Detector
- Add the Detector in the Detector library: click Add Detector From Library ► the Detector Library window will pop up ► select the Detector on the window to be added

The user can also conduct Add, Modify and Delete operations in the item library.



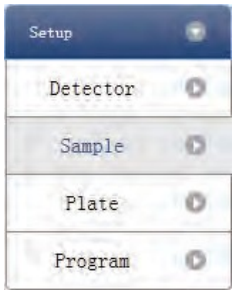
- Set up the item name, set up the dye name and set up the color



d) Set up reference dye

8.1.3. Sample Information Setting

a) Click Setup ► Sample



b) Add sample information

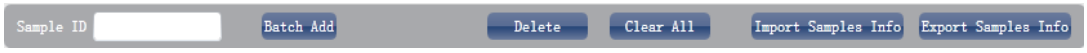
- Itemized addition: input ID in Sample ID ► press Enter ► add information for one sample
- Batch addition: click Batch Add ► the Batch Add window will pop up

c) Delete sample information

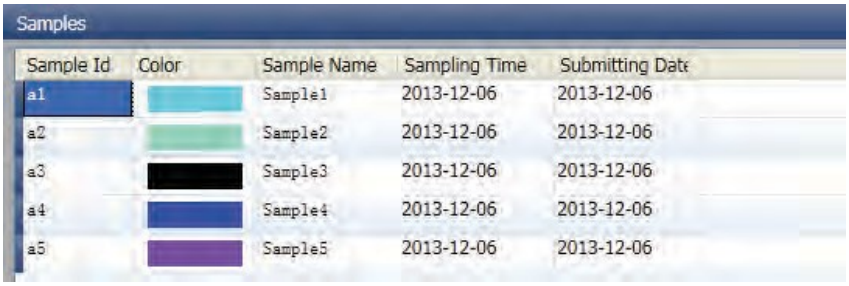
- Itemized deletion: select one sample ► click Delete ► delete the selected sample information
- Delete all: click Clear All ► delete all sample information

d) Import/Export sample information

- Click Import Sample Info ► the File Import window will pop up ► import sample information file in CSV format
- Click Export Sample Info ► the Save As window will pop up ► the sample information will be exported in CSV file format

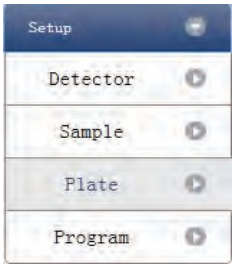


e) Set up sample information



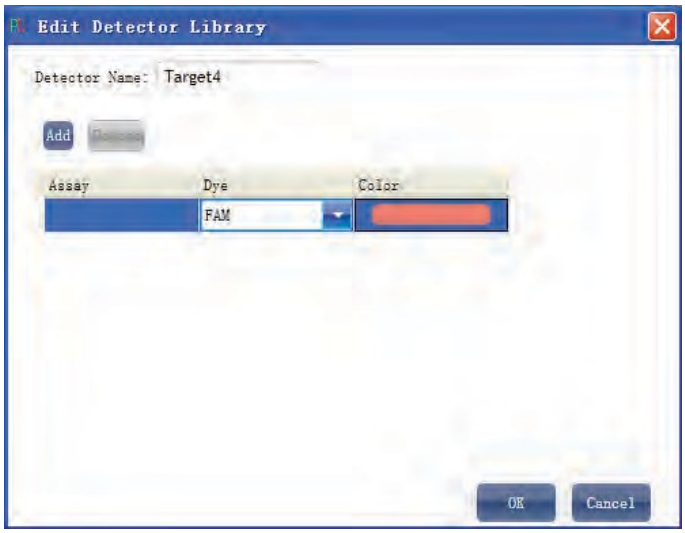
8.1.4. Reaction Plate Setting

a) Click Setup ► Plate



b) Set up the inspection criteria of the reaction plate

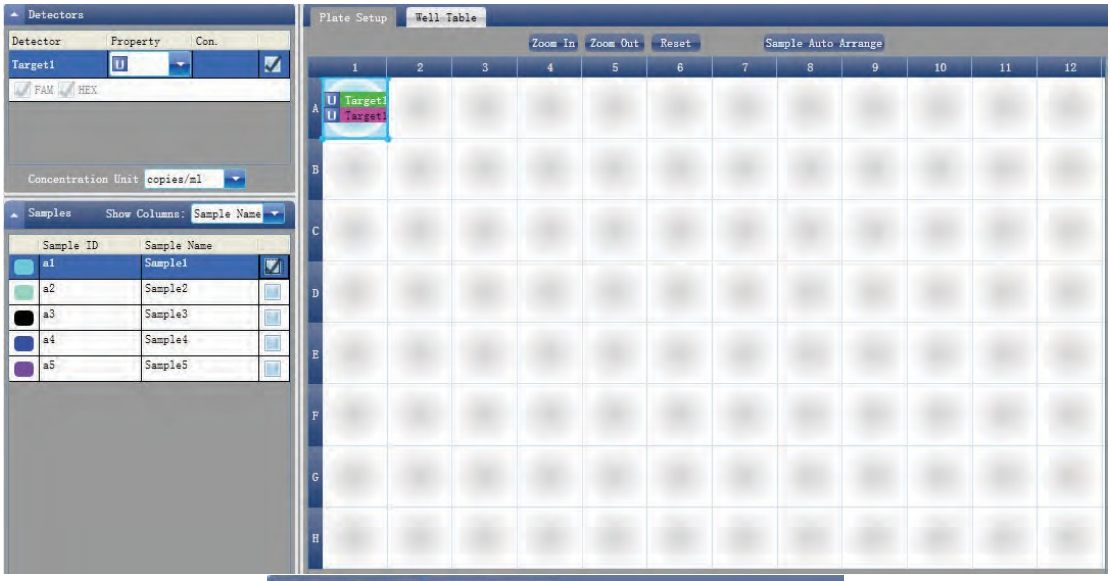
- Select reaction plate well site: click Reaction Plate well Site. The user can also right click the reaction plate well site to Copy, Paste and Add New Detector. Adding a new detector will open the Edit Detector Library window.

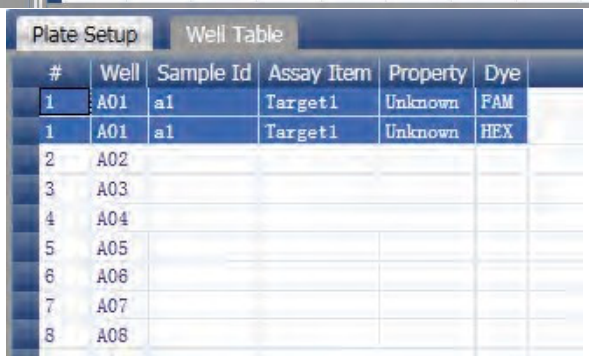


- Select inspection item and modify the property, concentration and concentration unit.

Property	Name	Concentration	Concentration unit
U	Unknown	NO	Copies/ml
S	Standard	YES	IU/ml
N	Negative	NO	Fg/ml
P	Positive	NO	Pg/ml

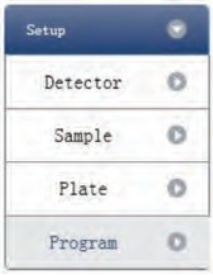
- Select a sample and the list displayed will change
- Zoom-In, Zoom-Out and reset the reaction plate.
- Sample Auto Arrange
- Check Well Table





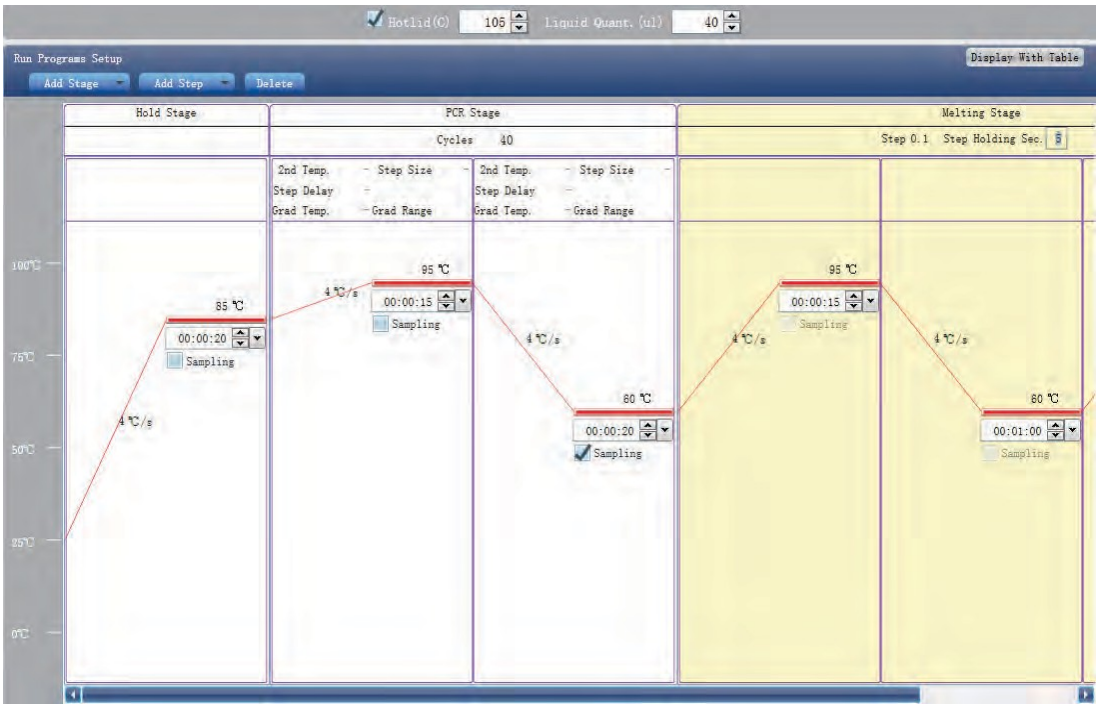
8.1.5. Program Setting

a) Click Setup ► Program



b) Run Program Setup

- Create new stage: the user can create a new Hold Stage, Cycling Stage or Melting Stage. The user can also click Add Stage directly and the default will be creating a new Cycling Stage.
- Create new step: the user can create a new step Before or After the currently selected step. The user can also click Add Step and the default will be adding a new Step at the end of the currently selected stage or after the currently selected step.
- Delete: the user can delete the currently selected step or stage
- Display form: click Display With Table ► new window will pop up ► the details of the current experiment will be displayed in a table.
- Set up the experimental data of the hold stage, cycling stage and melting stage melting section
- Set up the hot-lid temperature and liquid volume



8 2 Prepare for Reaction

The user should make full preparations prior to the experiment:

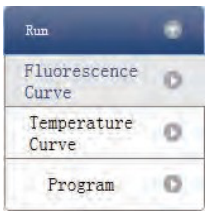
- Ensure appropriate materials are used.
- Ensure the arrangement of the PCR reaction plate is consistent with the setting layout of reaction plate in Section 2.4.

8 3 Run the Experiment

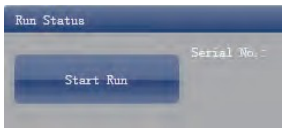
This section describes how to run the experiment after loading the reaction plate and covers the operating of fluorescence curve, the operating of temperature curve and Program Setting.

8.3.1. Run Fluorescence Curve

a) Click Run ► Fluorescence Curve



b) Click Start Run



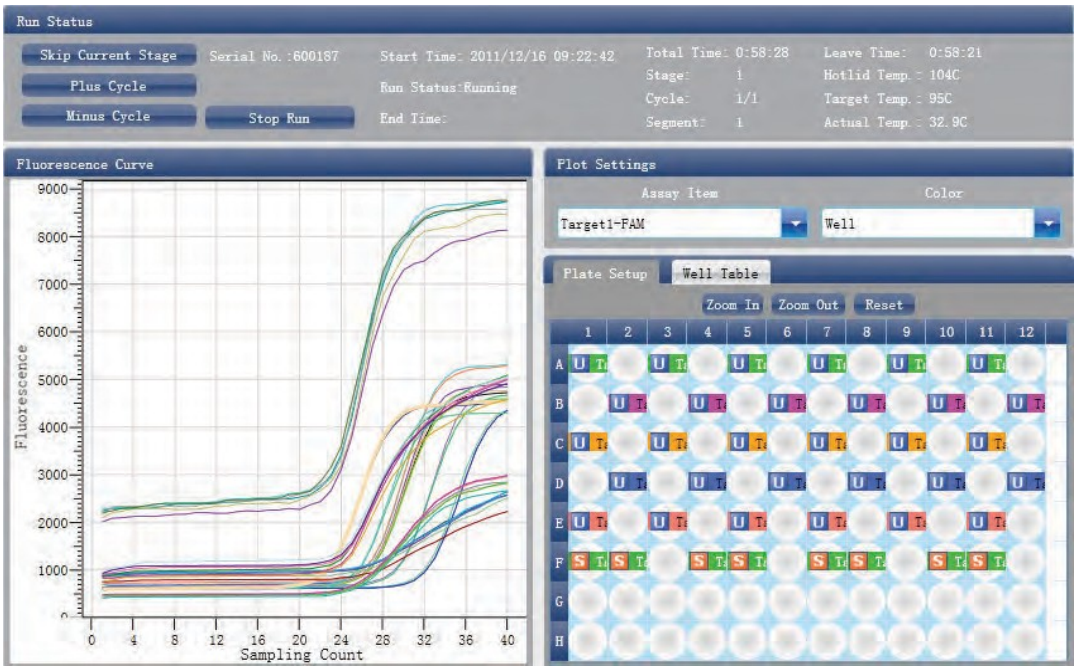
c) Operating confirmation. Modify hot-lid temperature and liquid quantity (sample volume).

d) After it starts running, the user can:

- Skip the current stage
- Add a cycle
- Delete a cycle
- Stop run

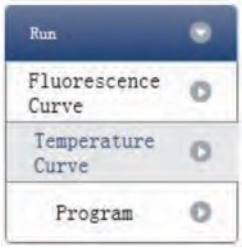
e) Plot display setting

- Assay item
- Plot color

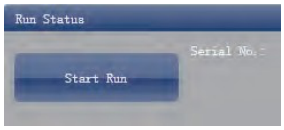


8.3.2. Run Temperature Curve

a) Click Run ► Temperature Curve



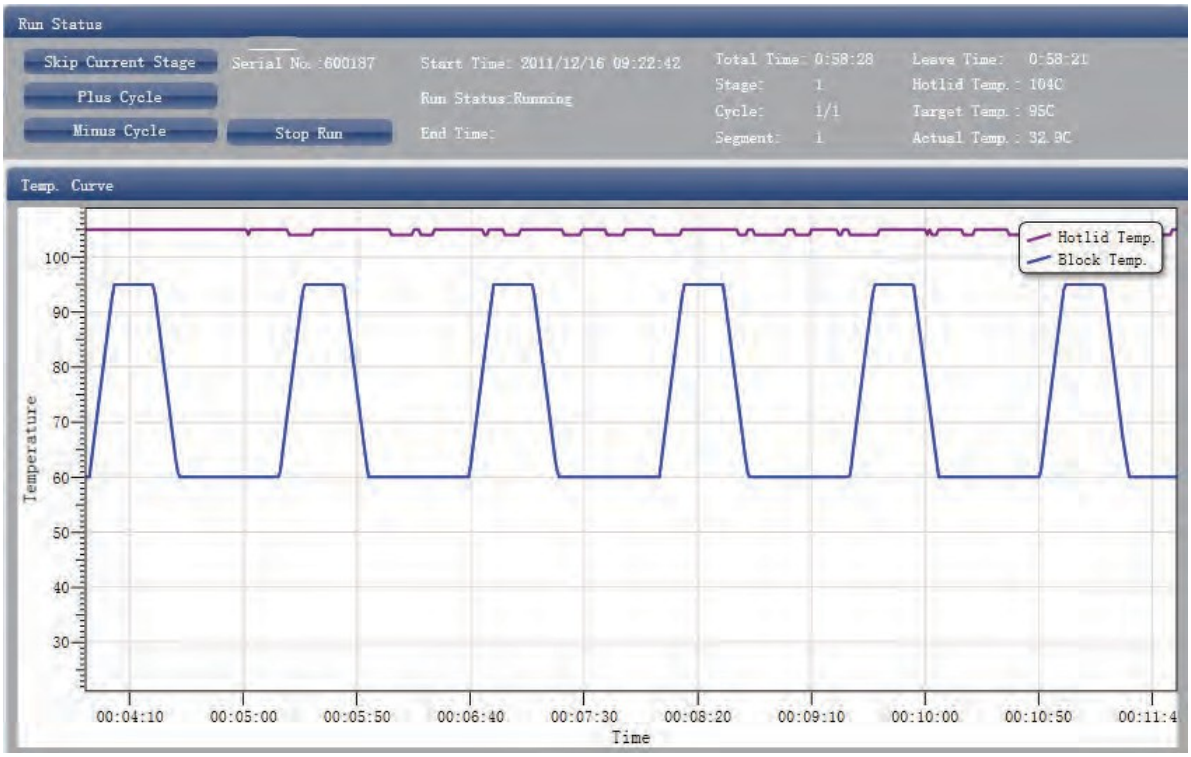
b) Click Start Run



c) Operating confirmation. Modify hot-lid temperature and liquid quantity (sample volume).

d) After it starts running, the user can:

- Skip the current stage
- Add a cycle
- Delete a cycle
- Stop run



8.3.3. Program Setting

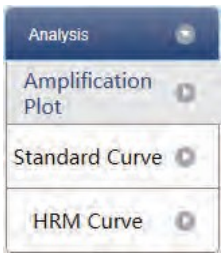
The user can only check the Program Setting but cannot make modifications.

8 4 Experiment Analysis

This section covers the analysis of amplification curves and standard curves, adjusting parameters for re-analysis and importing parameters.

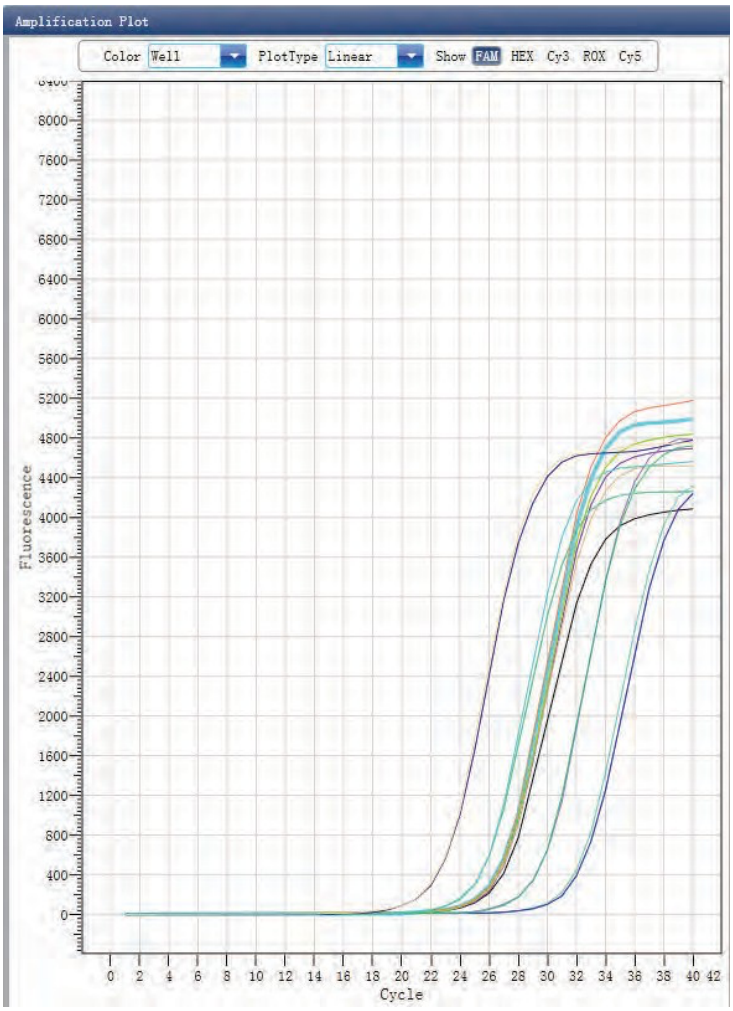
8.4.1. Check Results

a) Check the Amplification Plot. Click Analysis ► Amplification Plot



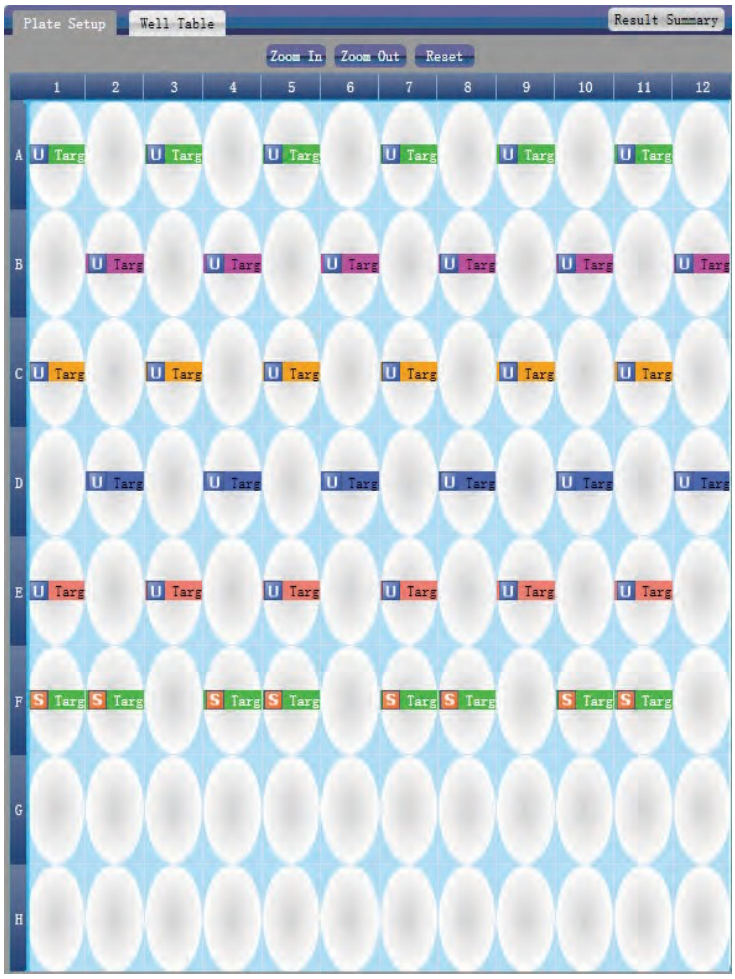
b) Check the amplification curve

- Set up color
- Set up plot type
- Set up show dye. When the background color of a dye name is blue, it will be displayed; while white indicates it will not be displayed.



c) Check the reaction plate

- Select reaction plate well site and check corresponding well site curve. The default is all wells are selected
- Zoom-In, Zoom-Out and reset the reaction plate
- Check well table
- Check results summary

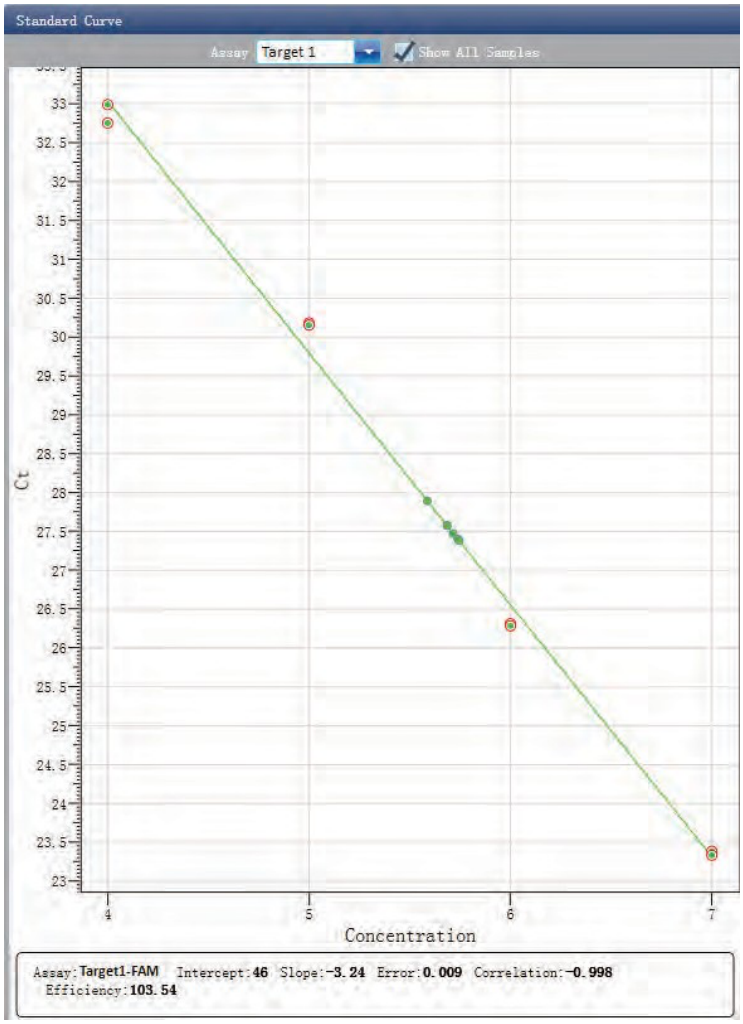


d) Set up inspection item

- Set up assay
- Set up threshold
- Set up automatic baseline. When the threshold value is not automatic, the user cannot set up the automatic baseline

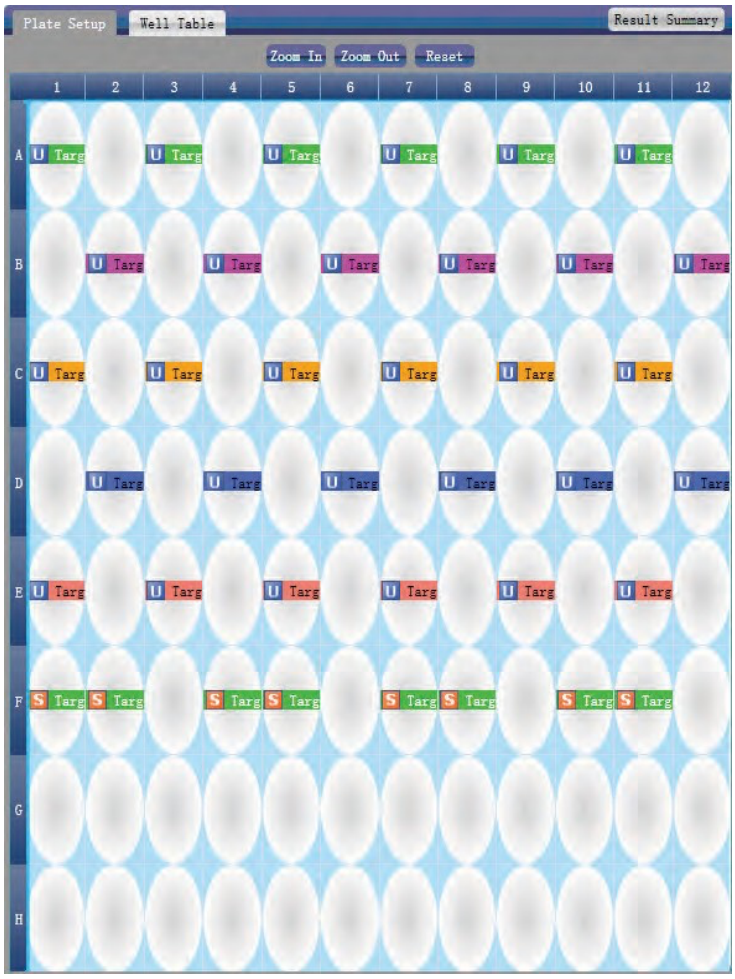
e) Check the Standard Curve. Click Analysis ► Standard Curve

- Check the Standard Curve. Set up array



f) Check the reaction plate.

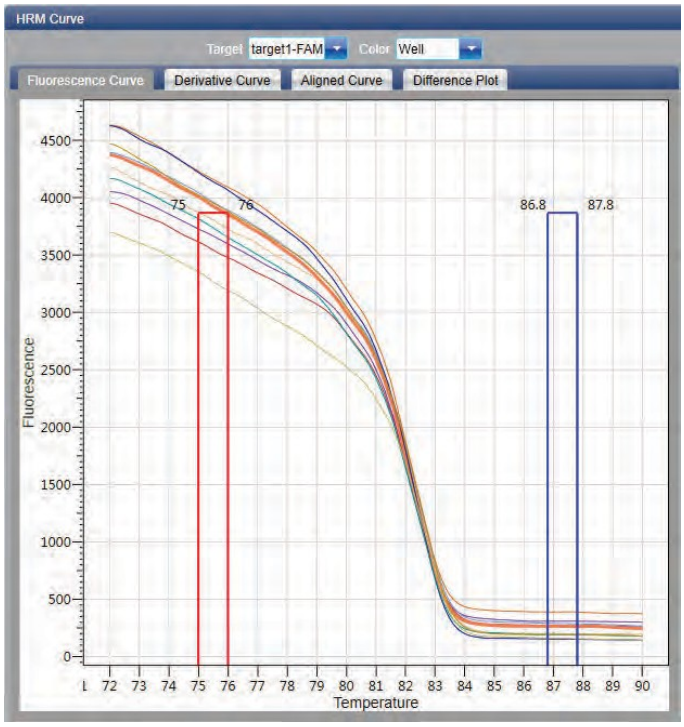
- Select reaction plate well site and check corresponding well site curve. The default is all wells are selected
- Zoom-In, Zoom-Out and reset the reaction plate
- Check well table
- Check results summary



g) Check HRM. Click Analysis ► HRM Curve

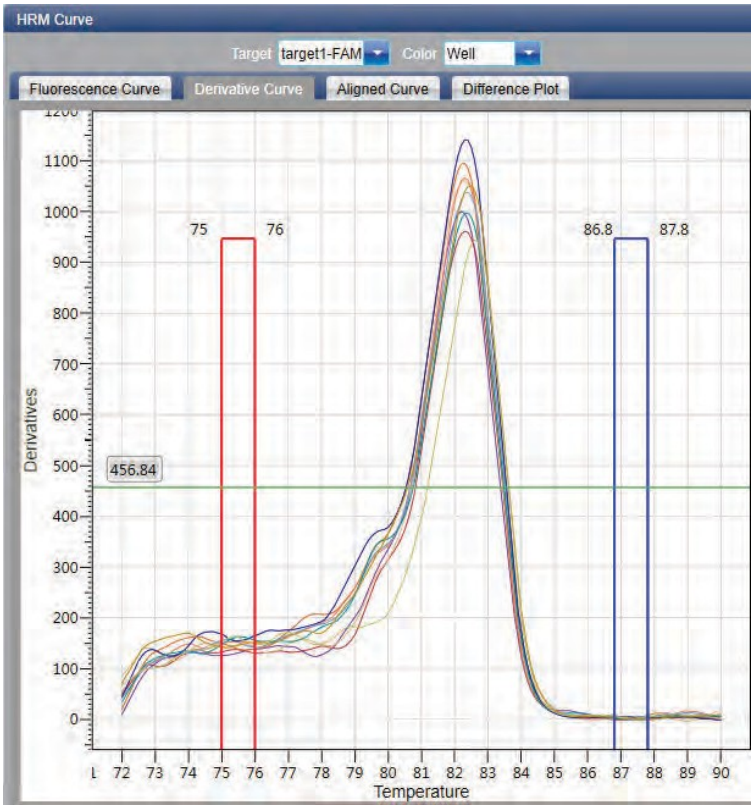
h) Check the fluorescence curve

- Set up target
- Set up color



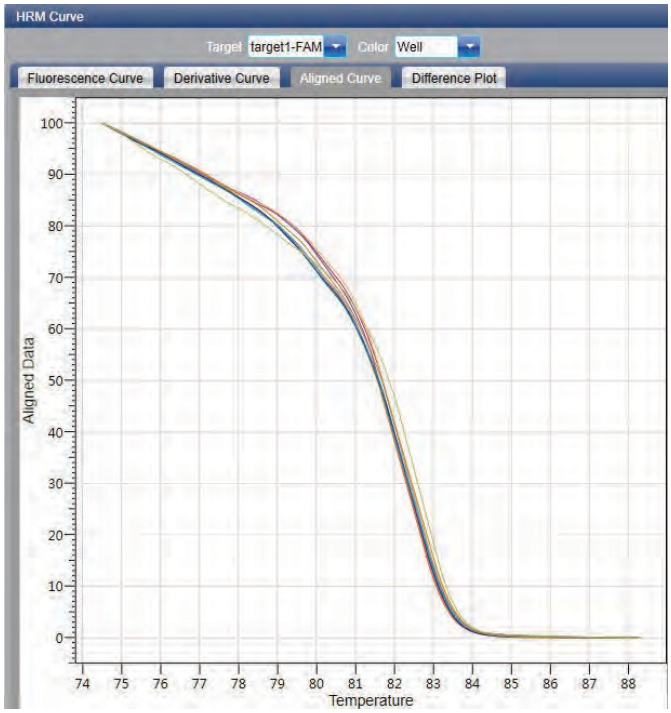
i) Check the derivative curve

- Set up target
- Set up color



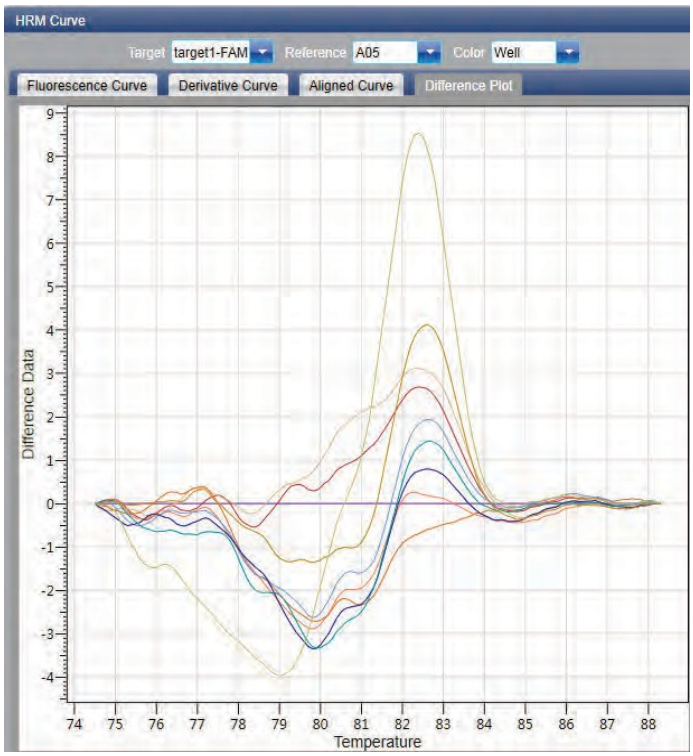
j) Check the aligned curve

- Set up target
- Set up color



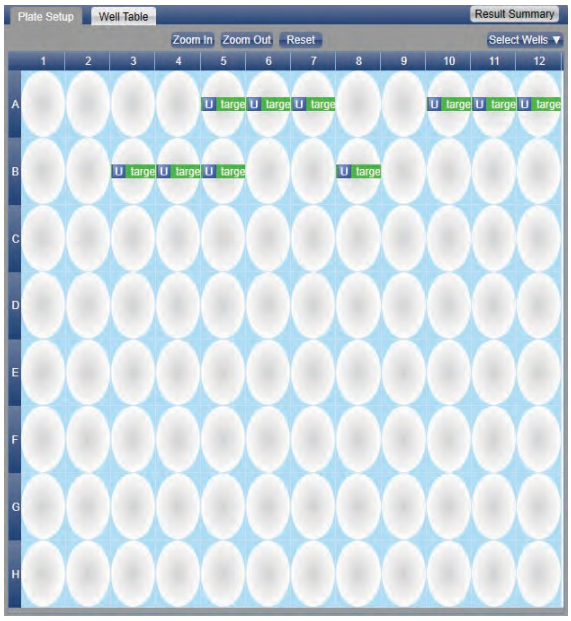
k) Check the Different Pilot

- Set up target
- Set up color



l) Check the reaction plate

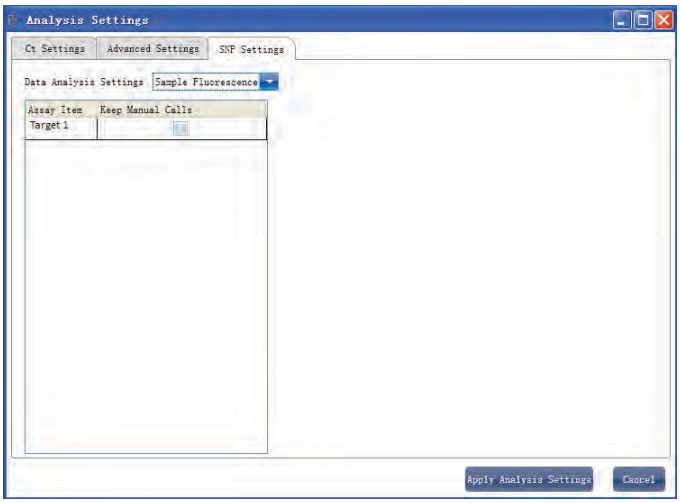
- Select reaction plate well site and check corresponding well site curve. The default is all wells are selected
- Zoom-In, Zoom-Out and reset the reaction plate
- Check well table



8.4.2. Adjust Parameter Re-analysis

a) Click Analysis Settings ► the Analysis Settings dialog box will pop up

- Adjust analysis data
- Adjust whether the inspection item will retain manual recognition genotype



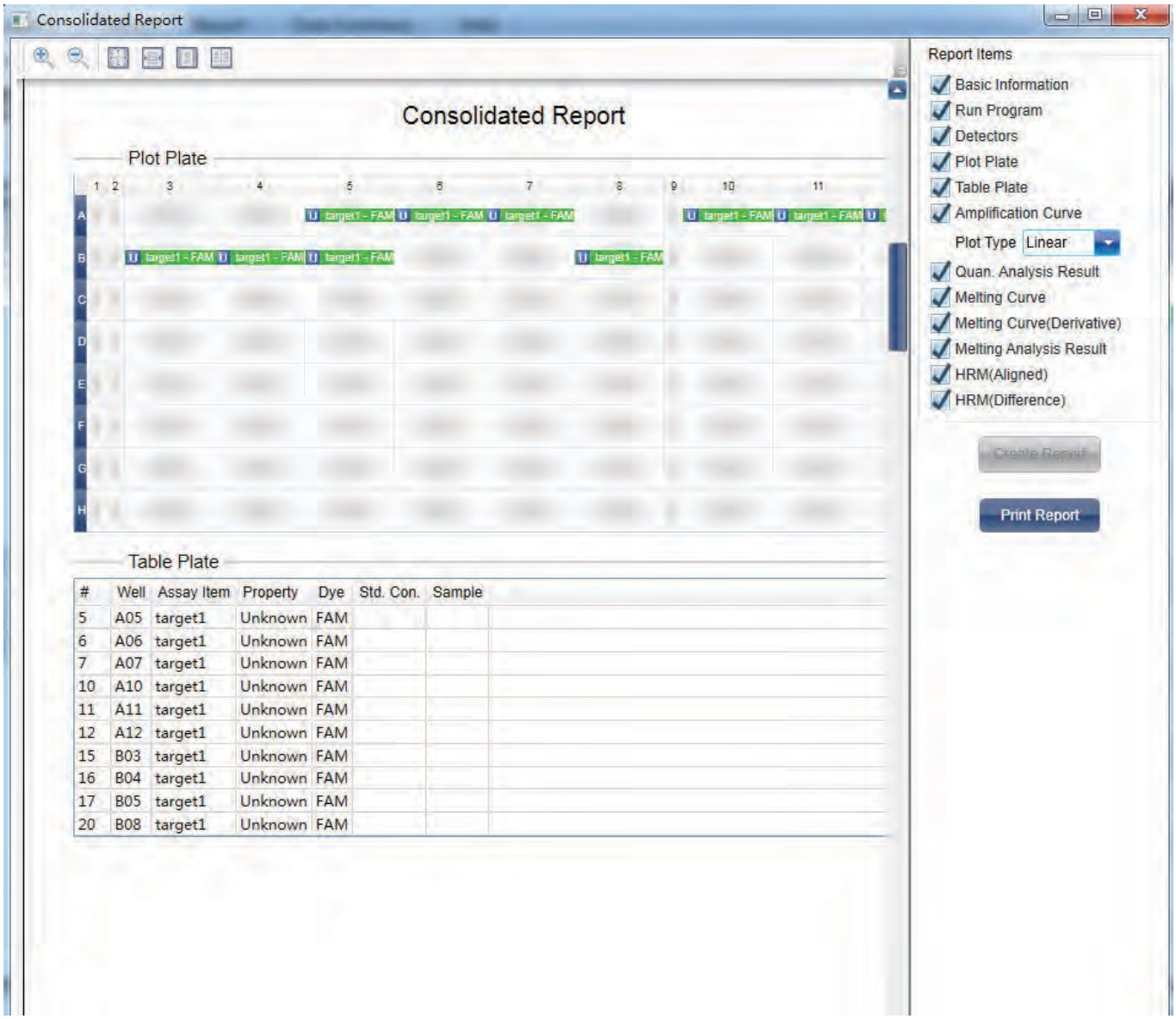
8 5 Experiment Report

This section describes how to print an experiment report and covers designing of a report template and print setting.

8.5.1. Comprehensive Report

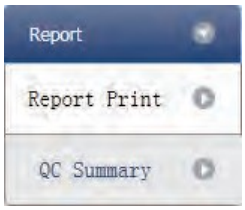
a) Click Report ► Consolidated Reports ► the Consolidated Report window will pop up.

The Consolidated Report includes the basic information, sample information, amplification curve, HRM curve, plate information, etc.

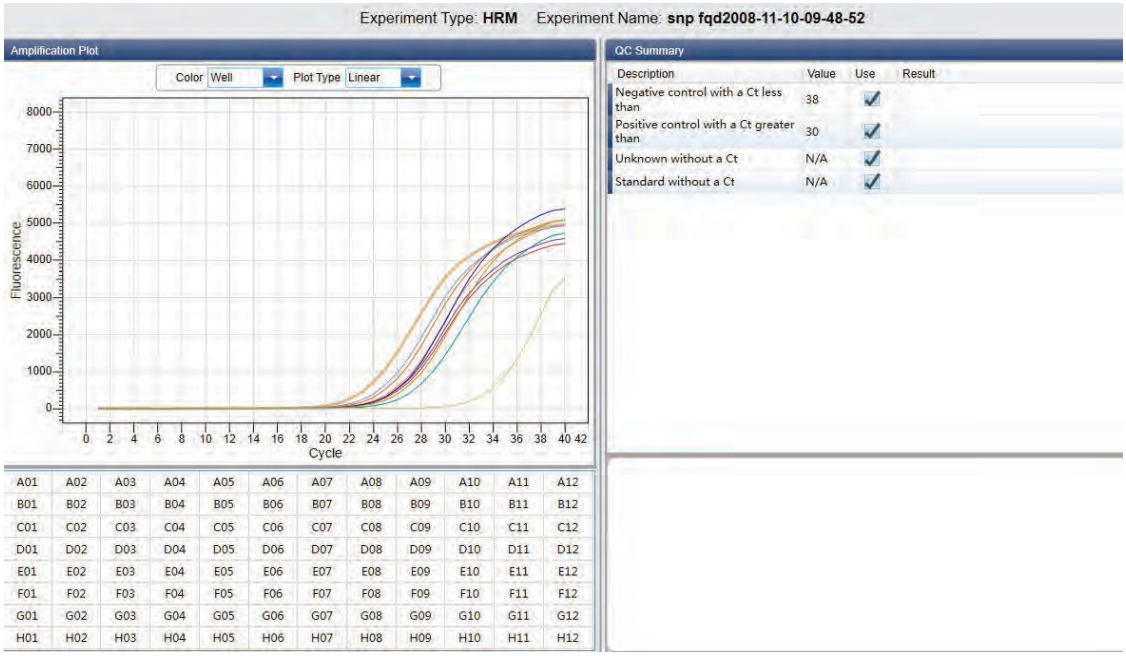


8.5.2. QC Summary

a) Click Report ► QC Summary



b) Check the QC summary



8 6 Data Export

This section describes how to export data and covers exporting to a database, Experiment Saving and exporting the experiment data to EXCEL.

8.6.1. Export to Database

Click Data Summary ► Export to Database ► the Save File dialog box will pop up ► save the exported database file

8.6.2. Experiment Saving

a) Click Data Summary ► Archived Experiment Directory ► the Experimental archive storage directory window will pop up ► set up the storage path of file

b) Experiment Saving. Click Data Summary ► Archived Experiment ► export the saved experiment file. The suffix of saved experiment file is.fqh

8.6.3. Export Experiment Data to EXCEL

Click Data Summary►Export Experiment ► Export Experiment to Excel ►the exported experiment data will generate EXCEL file.

8.6.4. Export Experiment Data to TEXT

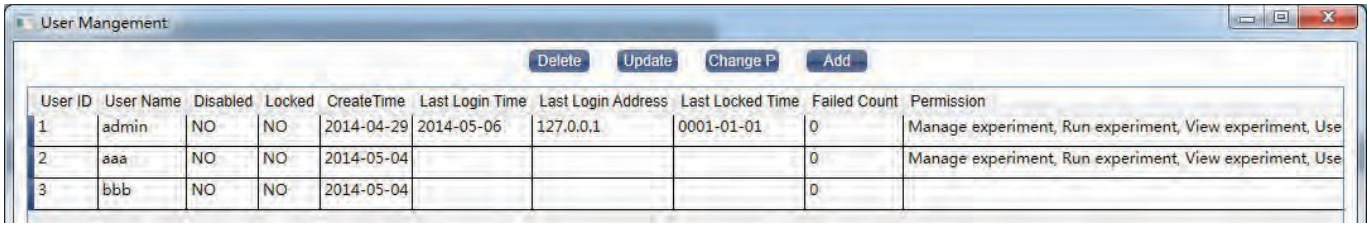
Click Data Summary►Export Experiment ► Export Experiment to Text► the exported experiment data will generate TEXT file.

Chapter 9 Service

9 1 User Management

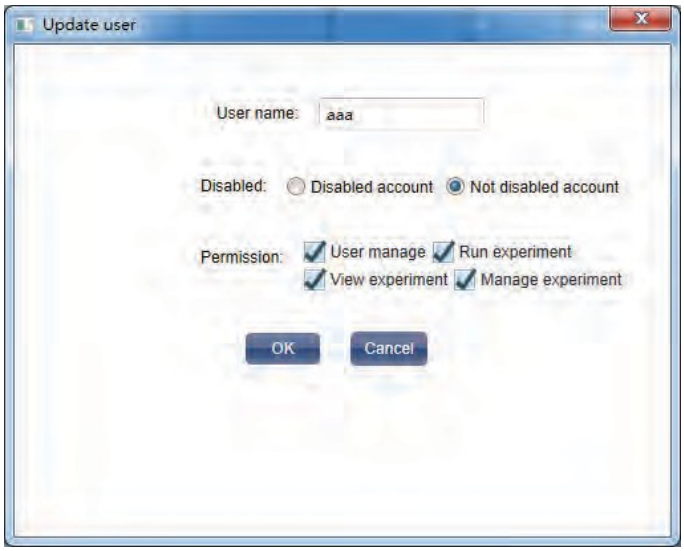
User management is used to manage user information

Click Service►User Management on the menu bar



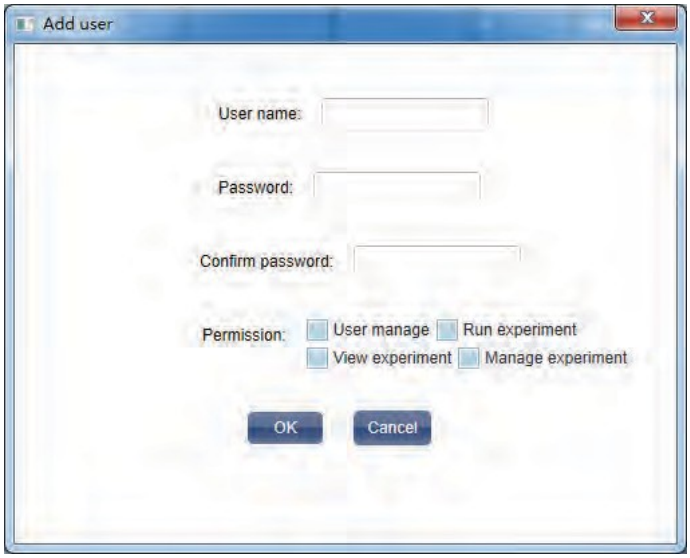
The user can:

- delete user
- update user



- change password

- add user



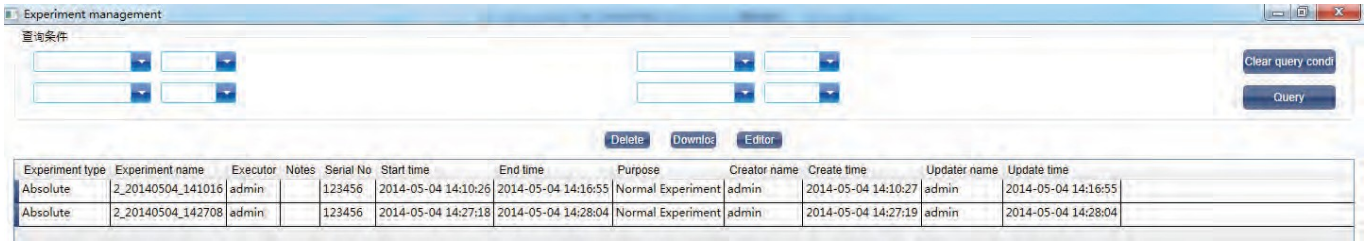
9 2 Experiment Management

Experiment Management is used to manage experiment information and deleted experiment information.

9.2.1. Experiment Management

Click Service►Experiment management► Experiment management on the menu bar.The user can:

- clear query condition
- set query condition
- query
- delete experiment
- download experiment
- edit experiment



9.2.2. Deleted Experiment Management

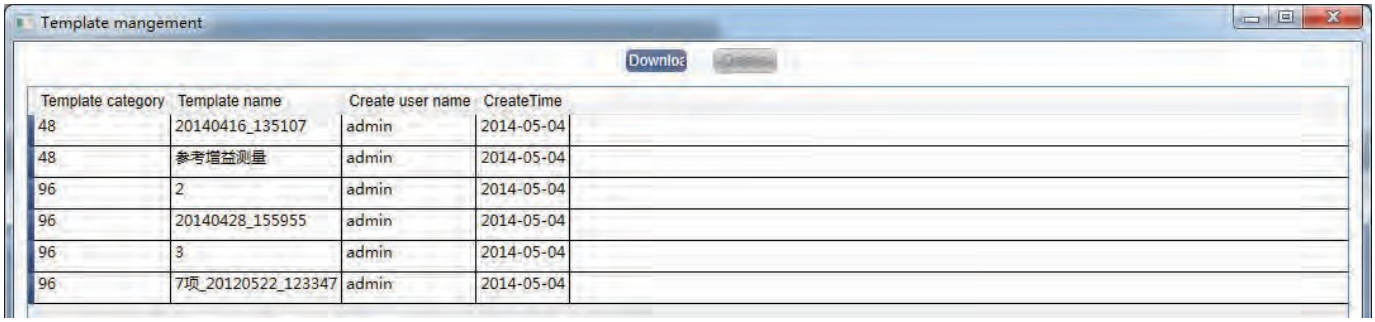
Click Service►Experiment Management►Deleted Experiment Management on the menu bar.The user can:

- clear query condition
- set query condition
- query
- delete experiment
- recover experiment
- clear experiment

9 3 Template Management

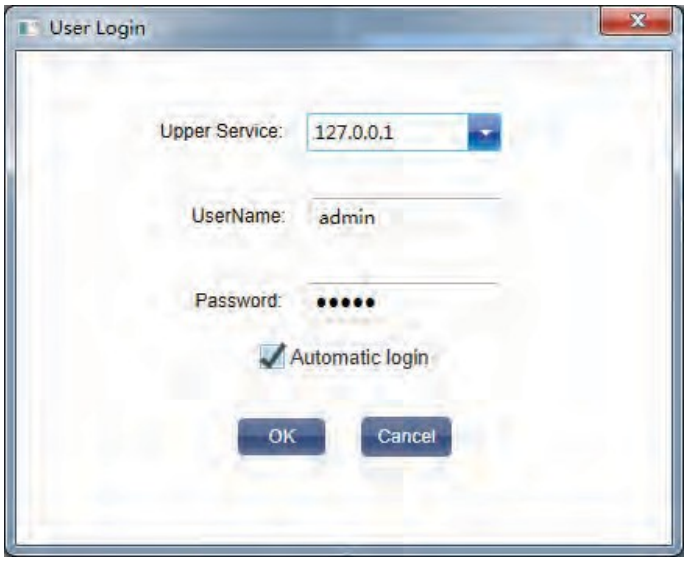
Template Management is used to manage template information. Click Service►Template Management on the menu bar. The user can:

- download template
- delete template



9 4 User Login

Click Service►User Login on the menu bar

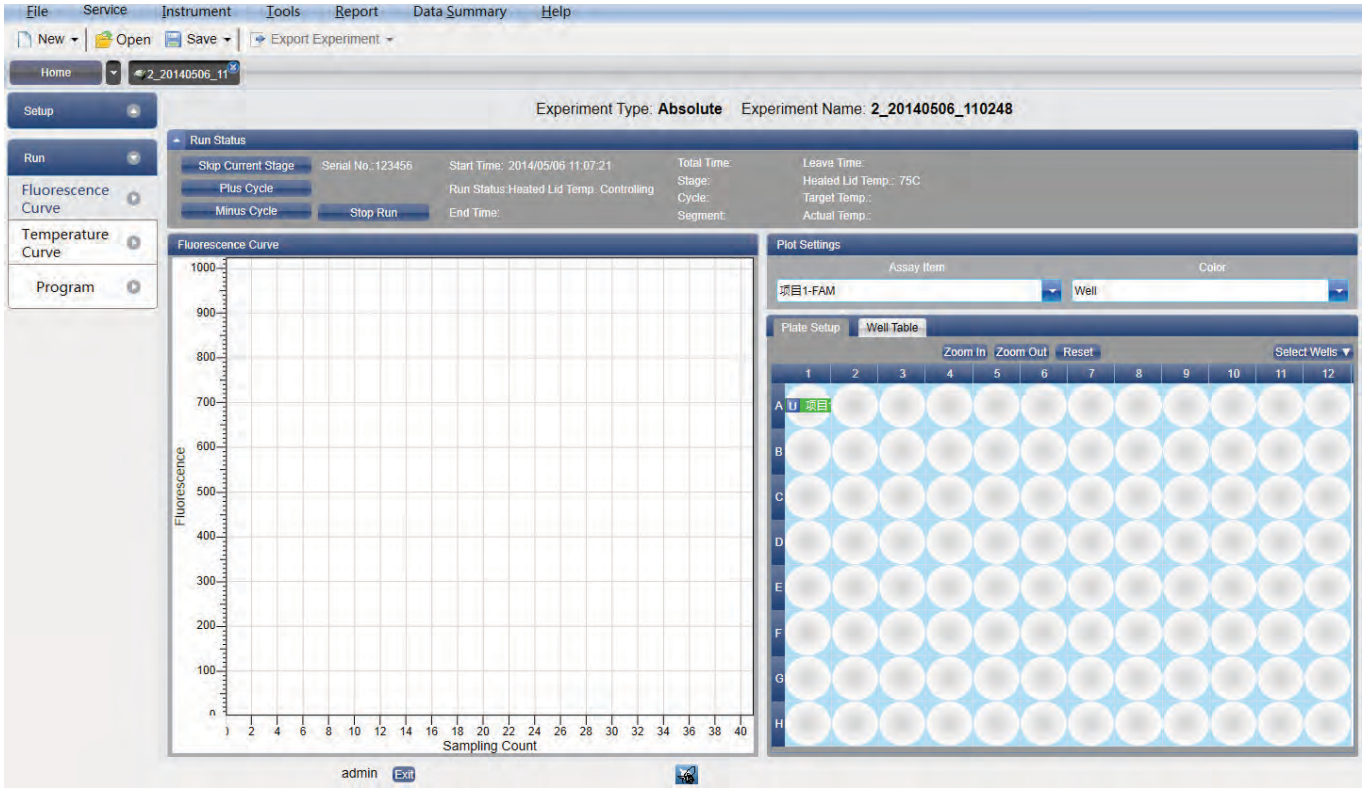


9 5 Change Password

Click Service►Change Password on the menu bar

9 6 See Running Experiment

See Running Experiment is used to see running experiment, which is running on connected instrument. Click Service► See Running Experiment on the menu bar



Chapter 10 Tool Usage

10 1 Gain Setting

Instrument is the automatic gain version, and there is no need to set the gain manually.

10 2 Block Scan Method

There is no need to set Block Scan Method

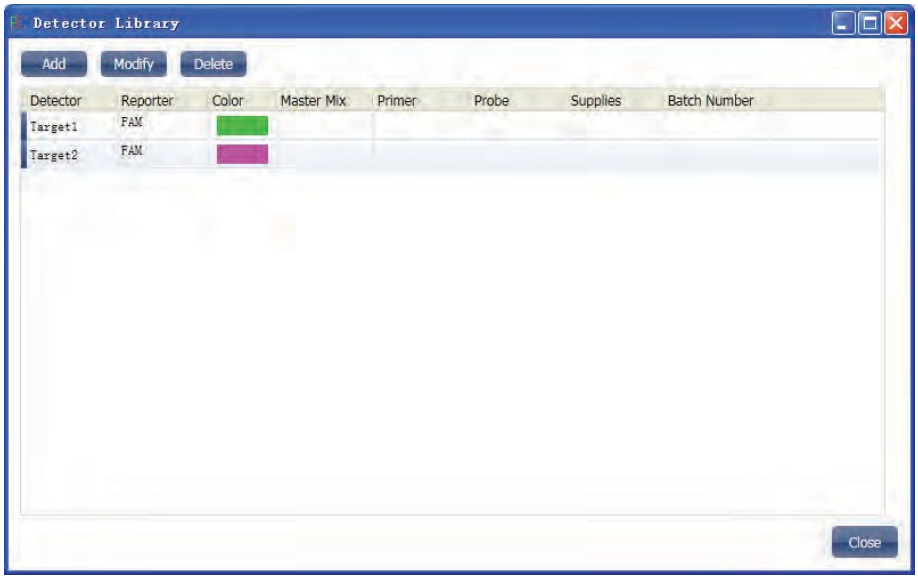
10 3 Detector Library

The Detector Library tool is used to set up the inspection libraries of absolute quantitative, relative quantitative and SNP analysis.

Click Tools ► Detector Library ► (Absolute /Relative/SNP) ► open the following window

The user can:

- Add Detector
- Modify Detector
- Delete Detector

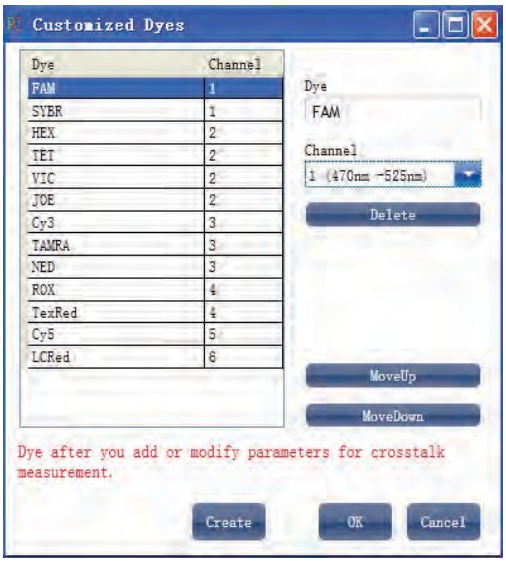


10 4 Customized Dyes

The Customized Dyes tool is used to set up existing dyes and newly added dyes. Click Tools ► Customize Dyes ► open the following window. The user can:

- Create dye
- Modify dye name and channel
- Delete dye
- Move dye upward
- Move dye downward

After adding new dyes or modifying dyes, the user should conduct crosstalk parameter measurements.



10 5 Customize Columns

Click Tools ► Customize Columns ► the following window will pop up

The user can:

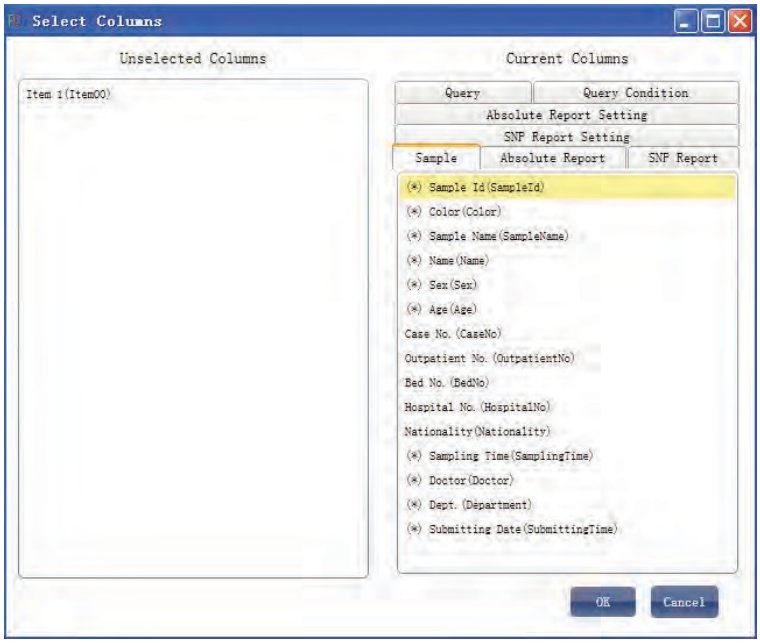
- Add columns
- Delete columns
- Modify column name

10 6 Column Selection

The Select Columns tool is used to add the new columns in above section into current existing columns, or remove existing columns in current column.

Click Tools ► Select Columns ► the following window will pop up

- Current existing column items include sample, report, report setting, query and query condition
- Double click column can add or remove a column
- Column with (*) indicates it cannot be removed



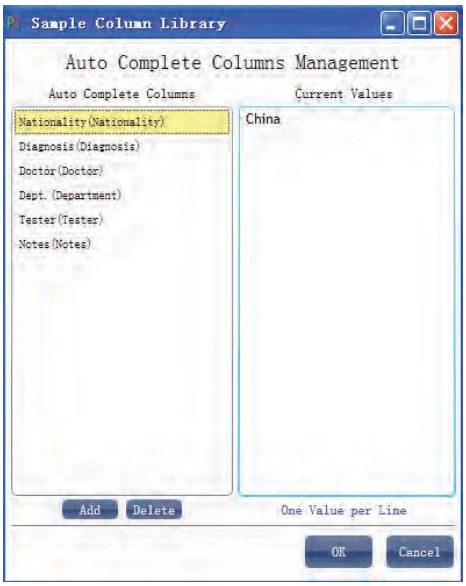
10 7 Sample Column Library

The Sample Column Library tool is used in the experiment design phase. The user can select the definition of contents in the drop-down box when setting up sample information.

Click Tools ► Sample Column Library ► the following window will pop up

The user can:

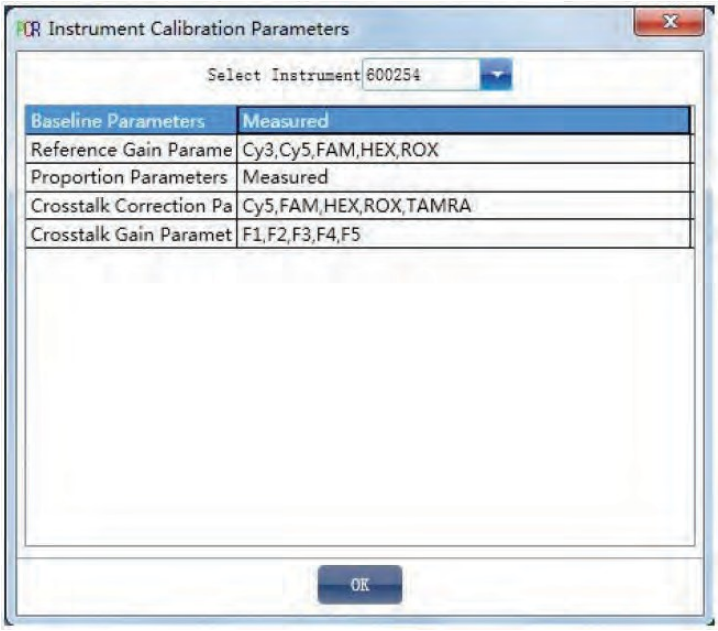
- Add columns
- Delete columns
- Edit the columns content



10 8 Instrument Calibration Parameters

The Instrument Calibration Parameters tool is used to calibrate the instrument parameters.

Click Tools ► Instrument Calibration Parameters ► the following window will pop up

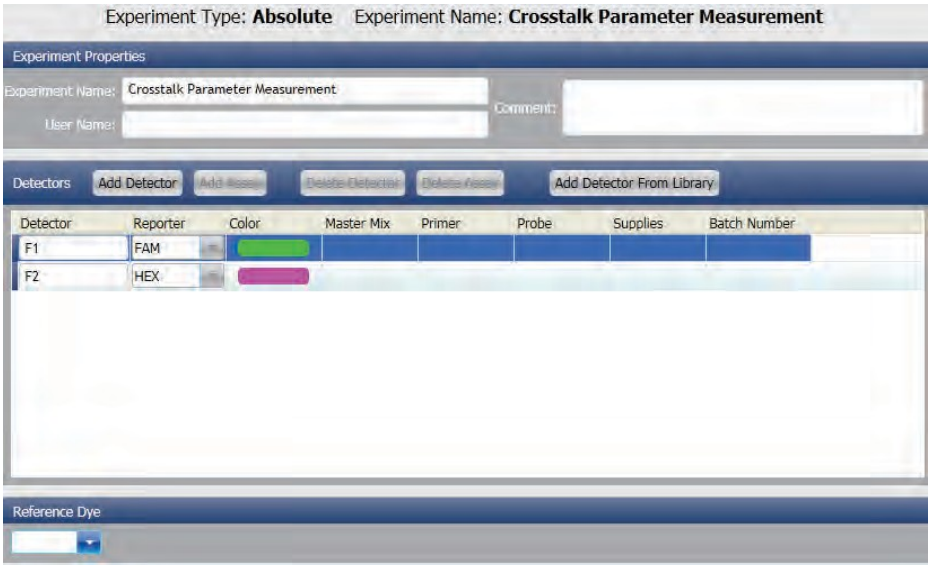


10 9 Measure Crosstalk Calibration Parameters

The Measure Crosstalk Calibration Parameters tool is used to measure crosstalk correction parameters.

Click Tools ► Measure Crosstalk Calibration Parameters ► the following window will pop up

The user can add and modify the channels to be tested and dyes according to his needs; upload corresponding reaction plates and operate the experiment. When the experiment is over, the system will automatically save the crosstalk correction parameters.

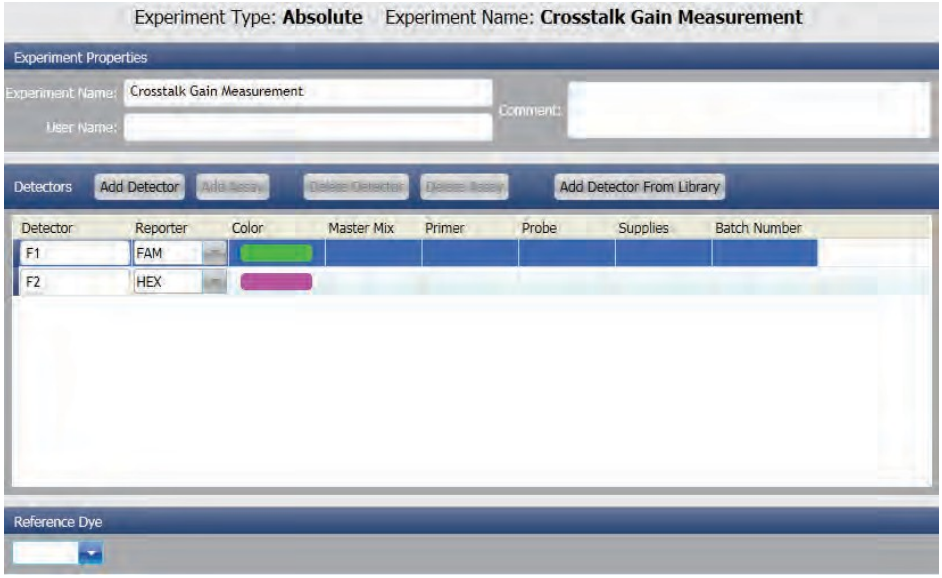


10 10 Crosstalk Gain Parameter Measurement

The Crosstalk Gain Parameter Measurement tool is used to measure crosstalk gain parameters.

Click Tools ► Measure Crosstalk Gain Parameters ► the following window will pop up.

The user can add and modify the channels to be tested and dyes according to his needs; upload corresponding reaction plates and operate the experiment. When the experiment is over, the system will automatically save the crosstalk gain parameters.



10 11 System Maintenance

The System Maintenance tools are used for system maintenance.

Click Tools ► System Maintenance ► the Password Input box will pop up

Input the correct Password ► conduct the following settings:

- Y-axis commissioning
- X-axis origin calibration
- Machine serial number setting
- Photomultiplier setting
- Runtime zero clearing
- Background measurement
- Reference gain measurement
- Fluorescence incremental calibration

10 12 Firmware Upgrades

Firmware Upgrade tools are used to upgrade the firmware.

Click Tools ► System Maintenance ►Firmware Upgrade ► the following window will pop up.

The user can:

- Select serial ports
- Select the BIN file to be upgraded
- Upgrade

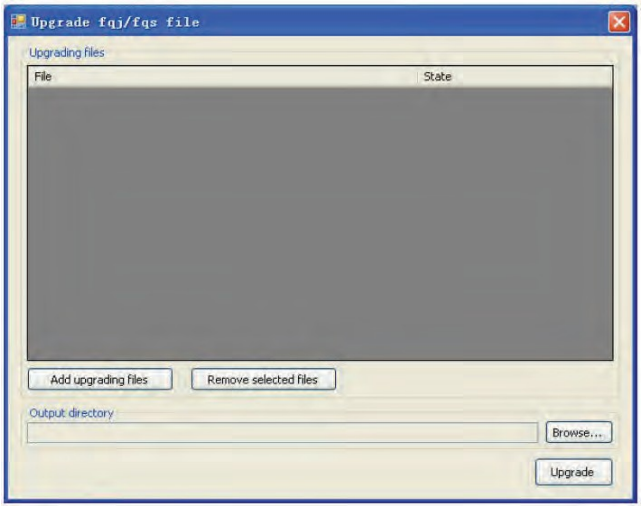
10 13 Upgrade Experiment File Format

The Upgrade Experiment File Format tools are used to convert old files with the suffix of.fqj or.fqs into new files with the suffix of.fqd.

Click Tools ► Upgrade Experiment File Format ► the following window will pop up.

The user can:

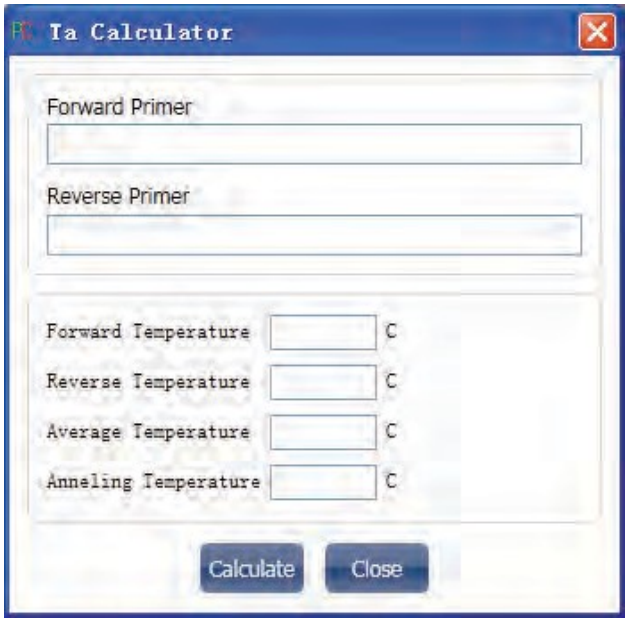
- Add files to be upgraded
- Remove selected files
- Select the output directory of new files
- Upgrade



10 14 Ta Calculator

Click Tools ► Ta Calculator ► the following window will pop up.

Input Forward Primer and Reverse Primer, click Calculate to gain Forward Temperature, Reverse Temperature, Average Temperature and Annealing Temperature.



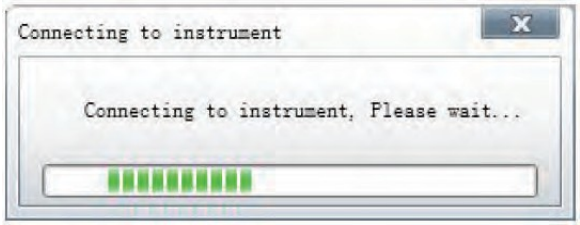
Chapter 11 Other Functions

11 1 Instrument Operation

The Instruments operations include Connect instrument, Disconnect instrument and Instrument Information.

11.1.1. Connect

Click Instrument ► Connect ► select port number or select automatic port matching.



When the instrument is connected, the icon on the status bar will be  ; if the instrument is disconnected, the icon on the status bar will be 

11.1.2. Disconnect

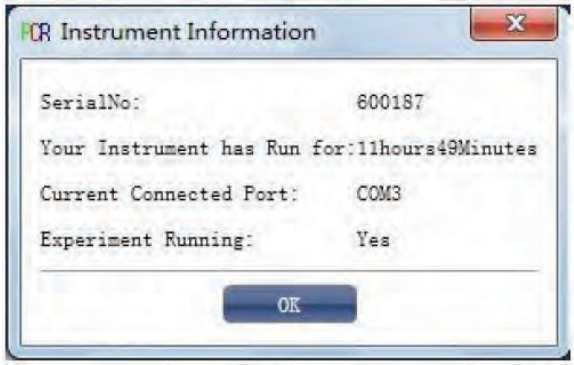
Click Instrument ► Disconnect ► disconnect currently connected instrument

11.1.3. Instrument Information

When the instrument is connected, the user can check the instrument information.

Click Instrument ► Instrument Information ► the following dialog box will pop up

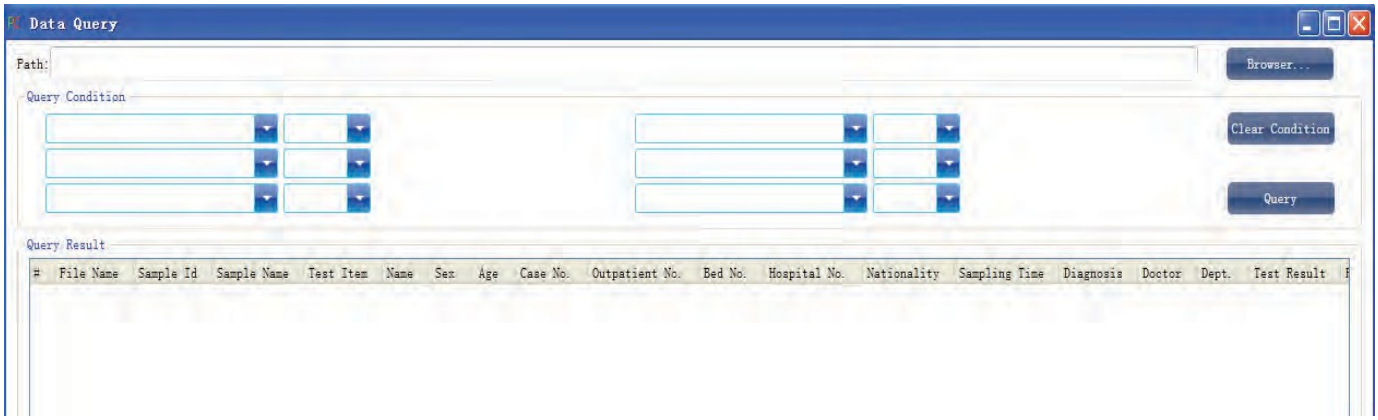
Instrument information includes instrument serial number, runtime, currently connected ports, and whether an experiment is in operation.



11 2 Data Query

Data Query is used to query the data already exported to the database. Click Data Summary ► Data Query ► the following window will pop up. The user can:

- Select database files
- Set up query condition
- Query
- Clear all query conditions



11 3 System Help

Click Help ► Help Topics

Chapter 12 Maintenance

12 1 Regular cleaning

In order to ensure the normal operation and test use of the instrument, it is suggested to clean the instrument regularly.

- Surface cleaning: use a soft cloth to clean; If necessary, dip in alcohol, distilled water or clean paste to clean;
- Cleaning of module hole: clean cotton swabs with dust-free and dip a small amount of 95% medical anhydrous ethanol or distilled water when necessary.

 Warning!	When cleaning the instrument, the power must be cut off. Corrosive cleaning agent is strictly prohibited on the surface of this instrument. If in doubt, please consult the manufacturer or its agent.
 Caution:	During the warranty period, users are forbidden to open the expansion instrument shell for self-inspection. If there is a fault in the above table that requires the instrument shell to be opened for inspection, timely contact with the supplier or manufacturer. Users are strictly forbidden to inspect or replace parts without permission. Only manufacturers or agencies can inspect or provide parts.

12 2 Analysis and Troubleshooting

S N	Fault Phenomenon	Cause Analysis	Way of Handling
1	The power switch behind the instrument has been set ON, but the instrument is not responsive	The RUN SWITCH in front of the instrument is not pressed.	Press RUN SWITCH.
2	System parameters menu shows that "password" needs to be entered.	The system parameters are used for internal calibration of the instrument manufacturer and need special password to enter.	Users do not need to use this feature. For calibration, please contact the manufacturer's service personnel.
3	The rising and cooling speed of module obviously slows down or the temperature control is inaccurate	The vent is blocked	Remove obstructions from vents
		Loose connection	Contact with the supplier or manufacturer
		Refrigeration piece is damaged	
		Fan is damaged or doesn't work	
		Temperature sensor is damaged	
4	The modules are neither heated nor cooled	Internal instrument fault	Contact with the supplier or manufacturer
		Refrigeration piece is damaged	
		Hot cover heating process	When the hot cover temperature of the instrument reaches the target value. The module temperature is automatically controlled at 30°C when it stops running
5	Temperature or Fluorescence Curve Exception: straight line,	The Run Program was infected with a virus and the computer CPU was severely occupied.	After antivirus, reinstall the application software.
6	The hot cover won't heat	Thermal fuse is damaged	Contact with the supplier or manufacturer
		Connector is loose	
		The heating element in the hot cover is damaged	
		Temperature sensor in hot cover is damaged	
7	The fluorescence value of each hole increased, or the background was very large without test tube	Contamination of test tube holes or hot covers; Baseline background parameters are misused.	Depollution, each instrument should correspond to Baseline File. After long-term use, the optical element is offset. Please contact the manufacturer to recalibrate the background.
8	Reagent evaporation	Tube quality problems, loose seal; Tube cover or film is not correct, not appropriate.	Select suitable consumables with better sealing performance
9	Signal crosstalk between channels	There is crosstalk between dye signals in different channels objectively.	It can be measured by "crosstalk coefficient measurement" function in the software, and the calibration parameters can be saved for correction.
10	Abnormal fluorescence detection values	External strong light irradiation	Turn off external light source
		Photovoltaic system is damaged	Contact with the supplier or manufacturer

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