
LineGene 9600 Plus

Fluorescent Quantitative Detection System

Instruction for Use

REF FQD-96A(EA2),FQD-96A(EA4),FQD-96A(EA5), FQD-96A(EA6)



Hangzhou Bioer Technology Co., Ltd.

Attention Users are recommended to read the contents of this manual thoroughly before operating the Hangzhou Bioer Technology Co., Ltd. Fluorescent Quantitative Detection System. To carefully observe all special Warnings and Cautions outlined in this manual. This manual should be maintained properly in good condition for reference.

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Thank you for your purchase of this product.

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

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Important Notes

1. Usual practice

Note: Very important information is contained within this instruction for use, 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.

Failure to observe the instruction could result in serious personal injury.

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.

Hangzhou Bioer Technology Co., Ltd. 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.

A) Instrument Earth

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

Internal maintenance or replacement of any part of the thermal cycler must only be carried out by qualified personnel. The instrument must be disconnected from the mains circuit prior to any maintenance being carried out.

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 (100-240V, 50/60Hz). The rated load for the power socket must not be less than the instruments maximum load of 600W

D) Power wire

The instrument is supplied with a power cable which should be always used when operating the instrument. If the power cable is damaged, it should be replaced with a new one of the same specification. Care must be taken that the power cable does not get compressed or tightly bent and that it does not lie across areas where it may cause a trip hazard to personnel.

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. The back of the plug should be grasped in the hand and pulled directly backwards to remove from the socket.

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 to avoid over-heating 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.

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 a test, care should be taken to prevent liquid from dropping onto the instrument.

The waste remaining following a test, such as consumables, reagents, etc. should be treated as advised in your local disposal procedures and should not be thrown into normal waste or poured down a drain.

If hazardous substances are used in a test, the user must be adequately trained before use. Waste hazardous substances must be disposed of according to local disposal instructions.

The instrument operator must be appropriately trained in its use.

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 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 or generates an abnormal sound/s or generates a strange odour.
- The instrument is dropped, or its casing is damaged.
- There is an obvious change in the function of the instrument.

Caution: When you are handling potentially hazardous biological substances such as human or animal derived tissues or fluids, appropriate protective clothing and gloves need to be used.

H) Transportation

If transporting the instrument again, the instrument and its detection wells need be empty and thoroughly cleaned before transportation and should preferably be disinfected by UV light. The power should be switched off and the unit un-plugged before commencing cleaning procedures. During the transportation, the instrument must be handled with CARE, both for manual handling and automatic handling.

Manual handling steps:

a) **Think before lifting/handling.** Plan the lift. Can handling aids be used? Where is the load going to be placed? Will help be needed with the load? Remove obstructions such as discarded wrapping materials. For a long lift, consider resting the load midway on a table or bench to change grip.

b) **Adopt a stable position.** The feet should be apart with one leg slightly forward to maintain balance (alongside the load, if it is on the ground). The worker should be prepared to move their feet during the lift to maintain their stability. Avoid tight clothing or unsuitable footwear, which may make this difficult.

c) **Get a good hold.** Where possible, the load should be hugged as close as possible to the body. This may be better than gripping it tightly with hands only. **Start in a good posture.** At the start of the lift, slight bending of the back, hips and knees is preferable to fully flexing the back (stooping) or fully flexing the hips and knees (squatting). **Don't flex the back any further while lifting.** This can happen if the legs begin to straighten before starting to raise the load.

d) **Keep the load close to the waist.** Keep the load close to the body for as long as possible while lifting. Keep the heaviest side of the load next to the body. If a close approach to the load is not possible, try to slide it towards the body before attempting to lift it.

e) **Avoid twisting the back or leaning sideways,** especially while the back is bent.

Shoulders should be kept level and facing in the same direction as the hips. Turning by moving the feet is better than twisting and lifting at the same time.

f) **Keep the head up when handling.** Look ahead, not down at the load, once it has been held securely. **Move smoothly.** The load should not be jerked or snatched as this can make it harder to keep control and can increase the risk of injury. **Don't lift or handle more than can be easily managed.** There is a difference between what people can lift and what they can safely lift. If in doubt, seek advice or get help.

g) **Put down, then adjust.** If precise positioning of the load is necessary, put it down first, then slide it into the desired position.

D) Equipment Safety





The instrument was designed, produced, and tested in accordance with EN 61010-1 (IEC 61010-1) "Safety requirements for electrical equipment for measurement, control, and laboratory use -- Part 1: General requirements". It has left the factory in a perfectly safe condition.

The instrument meets the requirements of the Regulation (EU) 2017/746 of the European Parliament and of the Council of 5 April 2017 on in vitro diagnostic medical devices.

3. Instrument labels

A) Warning Sign

- Warning identification

DANGER!		Indicates danger if the instrument is used incorrectly.
SCALDING!		Indicates a scalding hazard as this area will be hot during use.
BIOHAZARD		Indicates a biohazard during use.
PROTECTIVE EARTH		Indicates the location of the protective earth on the instrument

- Warning mark










Warning! This indicates a surface which will be hot during and immediately following the running of a programme. Contact with this metal area will cause burns.

Warning! During the use of the instrument the user may meet biologically hazardous materials. Rules for safe handling of such materials must be followed. The operator must be appropriately trained.

B) Other symbols on the packaging

Date of manufacture		Indicates the date when the medical device was manufactured.
RoHS		Restriction on the use of certain hazardous materials (restriction of hazardous substances)
Consult instructions for use		Indicates the need for the user to consult the instructions for use.
Serial number		Indicates the manufacturer's derail number so that a specific medical device can be identified.
Catalogue number		Indicates the manufacturer's catalogue number so that the medical device can be identified.
In vitro diagnostic medical device		Indicates a medical device that is intended to be used as an <i>in vitro diagnostic medical device</i> .
CE mark		Indicates the medical device meets the CE related Directives.
Manufacturer		Indicates the medical device manufacturer.
Authorised representative in the European Community		Indicates the authorized representative in the European Community.
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 rain-proof.
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.
Relative humidity limit		The relative humidity should be controlled below 93%.
USB port		The location of the mark in the instrument indicates that the interface is USB.
Network interface		The position of the mark in the instrument indicates that the interface is a network cable interface.

4. EMC Consideration

Note: This is a class A equipment, only suitable for use in establishments other than domestic, and those directly connected to a low voltage power supply network.

5. Maintenance of instrument

Any stains on the instrument can be cleaned with soft cloth soaked with a gentle cleaning solution.

Heat conductive oil medium should not be used in the block wells of this instrument.

Module should not be left open for any period as this may allow dust to enter the instrument.

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.

6. Disposal



Potentially infectious material and all parts that may meet potentially infectious material must be disposed in accordance with the relevant legal provisions.

All parts which have been replaced must be disposed in accordance with the relevant legal provisions.



Disposal of the instrument must be carried out in accordance with the relevant legal provisions.

Disposal of the packaging material must be carried out in accordance with the relevant legal provisions.

7. 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 Hangzhou Bioer Technology Co., Ltd. to obtain the correct operation password.
- 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. A decontamination sheet should be completed and sent together with the instrument. These are available on request from your local supplier.
- It is recommended that service personnel disinfect the instrument on receipt in the service department, before commencing any scheduled work.

- Hangzhou Bioer Technology Co., Ltd. shall bear no liability in the event of any damage to the instrument occurring during transportation to the service department due to improper packaging.

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Chapter 1 General Description

This chapter mainly describes the applications, features, specification, model, performance parameters and software functions of LineGene 9600 Plus Fluorescent Quantitative Detection System.

1.1 Applications

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 quantitative detection of the analytes from human pathogens nucleic acid samples in the field of clinical labs and hospitals and so on.

1.2 Intended Use

The LineGene 9600 Plus Fluorescent Quantitative Detection System is an automated instrument used for quantitative detection of analytes in the related pathogen nucleic acids (DNA/RNA) from human samples using the polymerase chain reaction process. The samples can be nasopharyngeal and oropharyngeal samples, whole blood, blood plasma, blood serum, saliva samples and so on. The instrument is for in vitro diagnostic only.

The LineGene 9600 Plus Fluorescent Quantitative Detection System is intended for used in medical and biological laboratories by professional user trained in molecular biological techniques and the operation of QuantGene 9600 Fluorescent Quantitative Detection System.

1.3 Applied Reagents

The product is a standalone instrument and can be applied to various polymerase chain reaction (PCR) detection kits. Just like the Influenza A Virus / Influenza B Virus Nucleic Acid Detection Kit (Fluorescence RT-PCR) form Hangzhou Bioer Technology Co., Ltd.

1.4 Features

- Novel and human-orientated running interface for smooth operation.
- The adopted fluorescent real-time detection mode realizes simultaneous amplification and detection in the same tube without need of post experimental treatment.
- Advanced thermoelectric technology ensures fast and steady heating and cooling of the ultra-fast heat cycling system.
- Multi-point temperature control ensures consistent temperature of 96 sample wells.
- It can create a temperature gradient with 4 Thermo electric modules.
- Stable and accurate 1~36C gradient function makes optimising PCR conditions simple and easy.
- The constant temperature function of SOAK enables low-temperature storage of PCR reagents.
- It uses maintenance-free long life LED excitation light source.
- The advanced fibre optic transmission technology makes the photo-electric detection system very sensitive and reliable.
- Precise optical path system and ultra-sensitive PMT system provide the most accurate and sensitive fluorescent detection.
- It can create a real-time dynamic monitor of the entire PCR amplification process.
- It has high linear range up to 10 orders of start DNA copies without serial dilution.
- It is unnecessary to open the PCR reaction tube, ensuring samples are protected from contamination during and after PCR and ensures accurate results.
- Multiplexing is possible.
- The hot-lid technology allows for oil-free operation of PCR.
- Automatic hot-lid technology needs no manual opening/closing and ensures constant pressure of the hot-lid used with different height reaction tubes or plates.

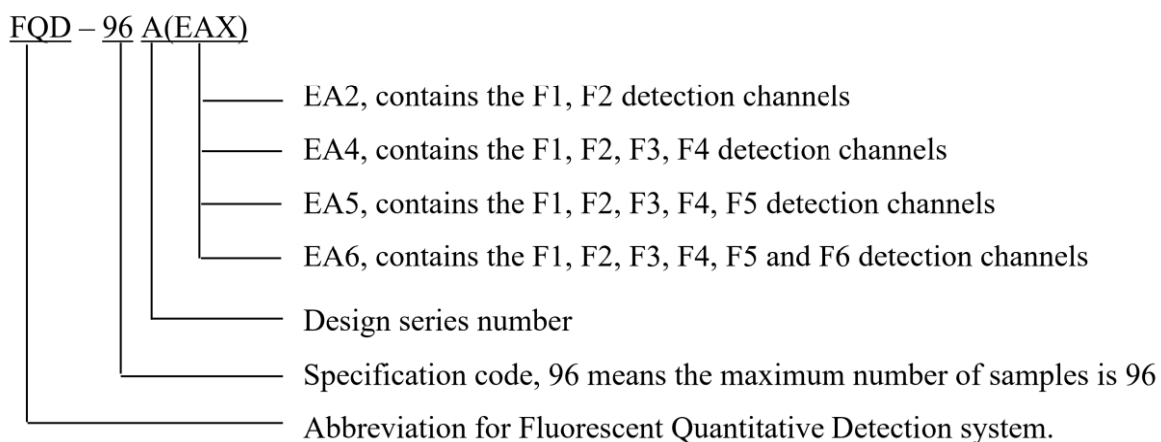
- User friendly interface with flexible programme setting and analysis and reporting using the stored parameters.
- It can print out one or more sample report(s).
- Automatic, correct and timely remote networked services provide the latest technical support.
- Unique patented advanced module bottom fluorescent detection technology.

1.5 Product Structure

The LineGene 9600 Plus Fluorescent Quantitative Detection System is mainly composed of control parts, hot lid parts, thermal cycle parts, photoelectric components, power supply components and software (V1.0).

1.6 Model and Description

Model:



1.7 Performance Parameters

Specification/model	FQD-96A(EA2), FQD-96A(EA4), FQD-96A(EA5), FQD-96A(EA6)					
Sample capacity	96x0.2ml, suitable for Single tube, PCR 8-Strip Tube, and 96 well PCR Microplate					
Detection channel	F1	F2	F3	F4	F5	F6
Applicable dye	FAM,	VIC,	ROX,	Cy5	Cy5.5	Cy3,

	SYBR Green I	HEX, TET, JOE, Cy3, TAMRA	TEX AS-RED	Quasar -670	Quasar -705	TAMRA
Temperature Range of block working	4~105°C (Minimum division:0.1°C)					
Heating/cooling rate	4.0°C/s (max)					
Temperature fluctuation	≤ ±0.1°C (full-range), (55°C typical value ≤±0.1°C)					
Temperature accuracy	≤ ±0.2°C (full-range), (55°C typical value ≤±0.1°C)					
Temperature uniformity	≤ ±0.4°C (full-range), (55°C typical value ≤±0.3°C)					
Temperature range of hot-lid working	30~110°C (adjustable, default 105°C)					
Repeatability of fluorescent intensity detection	5%					
Running mode	Continuous running					
Operation system	Windows XP/Windows Vista/Windows7/Windows8/Windows10					
Power supply	100-240V~ 50/60Hz 600W					
Dimensions	410mm×386mm×352 mm					
Weight	28kg					

1.8 Production Date and Service Life

Production date: See label for details.

Product life: 5 years

1.9 Functions of the Software

- a) Parameters setting-up function (including temperature, time, cycles, heating/cooling rate, selection of detection channel and yield of photo-electric amplification tube).
- b) Note function of text contents.
- c) Sample material record function (sample No., sample name and sample data).
- d) Document running display function (PCR heat cycle data display, fluorescence detection data display and real-time display of each data during running of instrument).

e) Detection data analysis function (The analysis function may be independently used without connection to the instrument).

f) Analysis result output function. It may output the analysis result to various types of documents, e.g.: EXCEL, TXT document. It is possible to run an enquiry and print out analysis result, modify the printing format and select/de-select items to print.

g) Document storage function (setting up data, running data and analysis results).

h) Fault protection and alarm function

Caution: The above-mentioned software functions are merely for reference. The software functions may be modified without notice.

1.10 Product Software Version

Release version of this product software: V1

Chapter 2 Preparations

This chapter mainly describes use, transport and storage condition, structural composition, installation/unloading of software and preparations before first using the LineGene 9600 Plus Fluorescent Quantitative Detection System.

2.1 Transport and Storage Conditions

Environmental temperature: $-20^{\circ}\text{C}\sim 55^{\circ}\text{C}$

Relative Humidity: $\leq 80\%$

2.2 Normal Working Conditions

Environmental temperature: $10^{\circ}\text{C}\sim 30^{\circ}\text{C}$

Environmental RH: $\leq 70\%$

Altitude: $< 2000\text{ m}$

Power supply: $100\text{-}240\text{V} \sim 50/60\text{Hz} 600\text{W}$

Caution: Before using the instrument, please make sure the working conditions meets the above requirements. The power socket shall be a 3-hole socket and properly earthed.

2.3 Preparations before Starting the Instrument

Connection of power wire: Only the power cable supplied with the instrument should be used. At connection, make sure the instrument power switch is in the “OFF” position and after connection the power cable should be checked to ensure a tight contact with the instrument socket; otherwise, it should be replaced.

Connection of communication wire: The supplied communication wire and communication conversion box should be used. One end of the communication conversion box relates to the DB15 communication interface at the back of the instrument, and the other end connected with the computer USB, RS232C or Bluetooth interface. After connection, screws should be securely tightened.

Caution: If with prolonged use the supplied power cable connection becomes loose, it should be replaced with one of the same type and specification.

The communication conversion box is built with special circuits and must not be opened.

2.4 System Installation and Unloading

2.4.1 Selection of a Computer System

System Environment

Operating system: Windows XP/Windows Vista/Windows7/Windows8

Runtime environment: Net Framework 4.0

Other software: PDF reader

Minimum configuration:

Processor: Intel Core i3

Memory: 2GB

Hard Disc: 10GB

2.4.2 System Installation

Double click PcrServer installation file (PcrServerSetup.exe) ► display the installation interface (select installation language) ► set up installation path ► install

Double click LineGene9600 installation file (LineGene9600ScientificSetup.exe) ► display the installation interface (select installation language) ► set up installation

2.4.3 Operating System

1. Double click the LineGene9600 shortcut on the desktop Or Click the start menu ► Program ► LineGene9600

2. Double click the PcrServer shortcut on the desktop Or Click the start menu ► Program ► PcrServer

2.4.4 System Unloading

Control Panel ► Add/Delete Program ► PcrServer ► Unloading

Control Panel ► Add/Delete Program ► LineGene9600 ► Unloading

Chapter 3 Start

3.1 Checks before Start

After inserting the power plug and switching on this detection system, the following should be checked:

- Check the voltage of the power supply is consistent with the system-required one.
- Check the power cable plug for correct and reliable insertion into the power socket.
- Check the communication converter for correct insertion into the host and tightening and the cable plug for correct and reliable connection to the computer.
- Check the update shift switch MODE of communication converter is set to “normal” state.
- Check the environmental conditions meet the required tolerances.

3.2 Start

To ensure effective connection and communication between the instrument and the computer system, the system shall be started in the following sequence:

1st step: Start computer display and host.

2nd step: Turn on power using the switch on the back of the instrument.

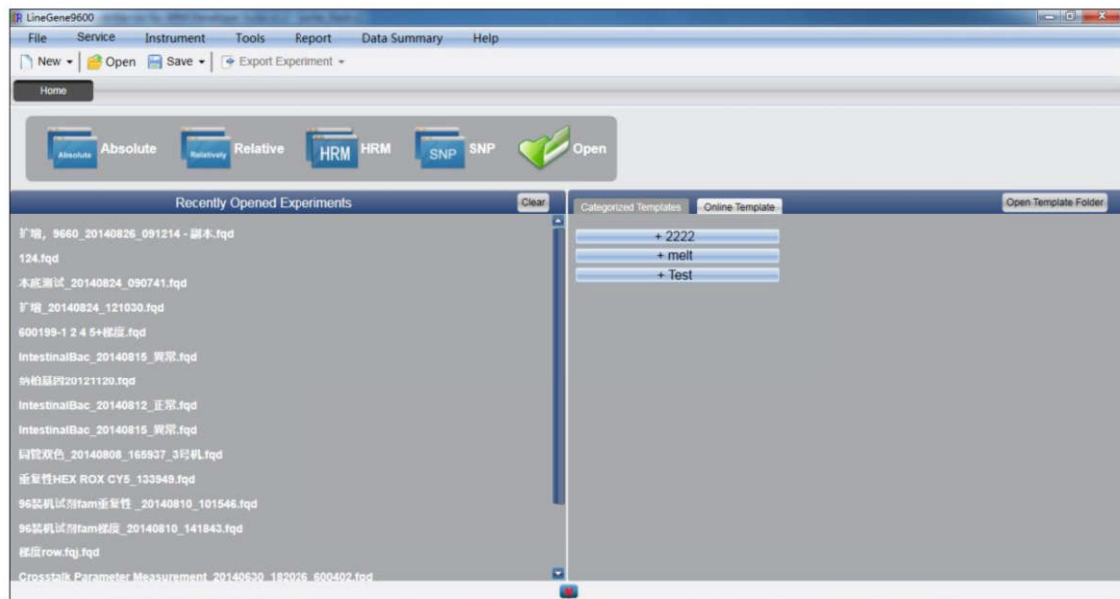
3rd step: Press the Run Switch on the front cover of the instrument to set the system ready to run.

4th step: On the computer after entering operation system, start the LineGene 9600 fluorescent quantitative detection system. To start the software, click “LineGene9600” from [Start]/ [programme] menu or double click the short-cut icon on desktop.

3.3 Starting Software Interface

Run the programme and it will display the system window.

LineGene 9600 Plus Fluorescent Quantitative Detection System



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

Chapter 4 Absolute Quantification

4.1 Design Experiment

Start
▼
Design Experiment
▼
Prepare for the Reaction
▼
Run the Experiment
▼
Experiment Analysis
▼
Experiment Report
▼
Data Export
▼
End

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

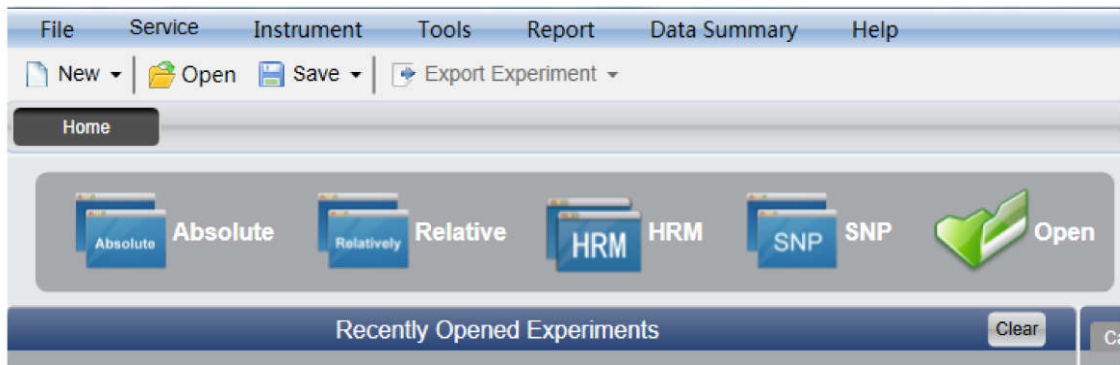
4.1.1 Create New Absolute Quantitative Experiment

1. 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:

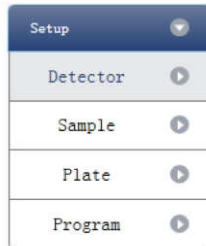
a. Clicking **File ► New ► Absolute** on the menu bar

b. Clicking **New** ► **Absolute** on the toolbar



4.1.2 Detector Setting

1. Click Setup ► Detector



2. Input experiment properties

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

A screenshot of the 'Experiment Properties' dialog box. It contains three input fields: 'Experiment Name' with the value '20111117_Experiment', 'User Name' with the value 'user', and 'Comment' with the value 'remark'.

3. Detector Setting

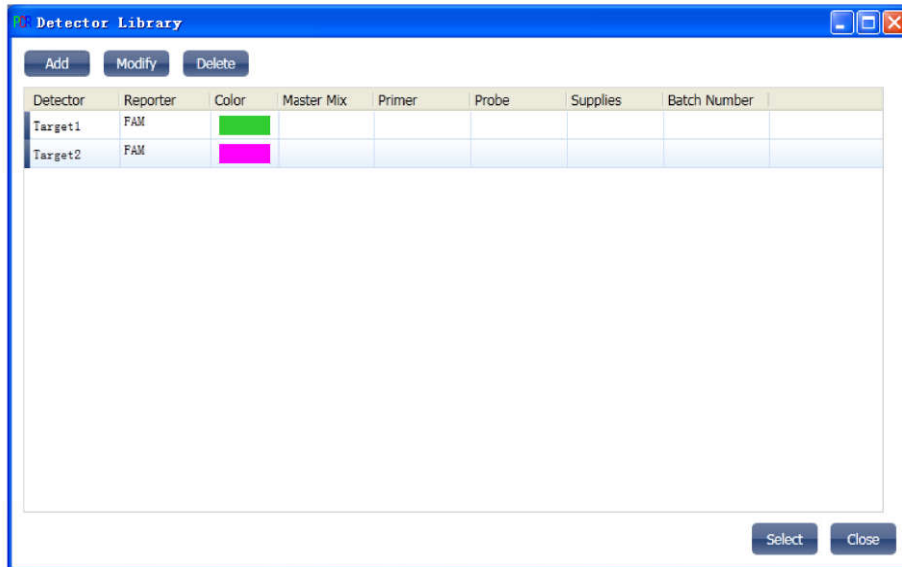
Set up the Detector, Assay, Dye and Colour.

If necessary, the user can also:

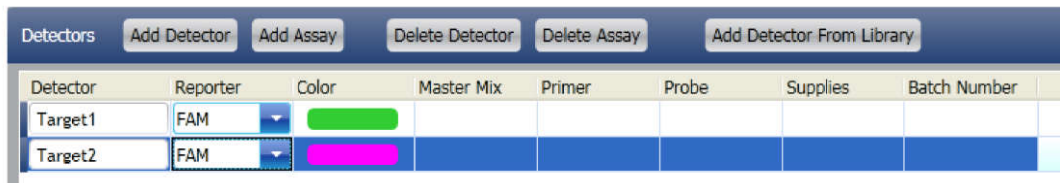
- a. Add detector
- b. Add assay
- c. Delete detector
- d. Delete assay

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.



f. Set up the detector, set up the assay, set up the dye name and set up the colour

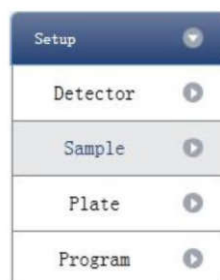


4. Set up reference dye



4.1.3 Sample Information Setting

1. Click Setup ► Sample



2. Add sample information

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

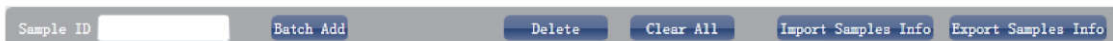


3. Delete sample information

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

4. Import/Export sample information

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



5. Set up sample information

Sample Id	Color	Sample Name	Sampling Time	Submitting Date
a1	Red	Sample1	2013-12-06	2013-12-06
a2	Green	Sample2	2013-12-06	2013-12-06
a3	Black	Sample3	2013-12-06	2013-12-06
a4	Blue	Sample4	2013-12-06	2013-12-06
a5	Purple	Sample5	2013-12-06	2013-12-06

4.1.4 Reaction Plate Setting

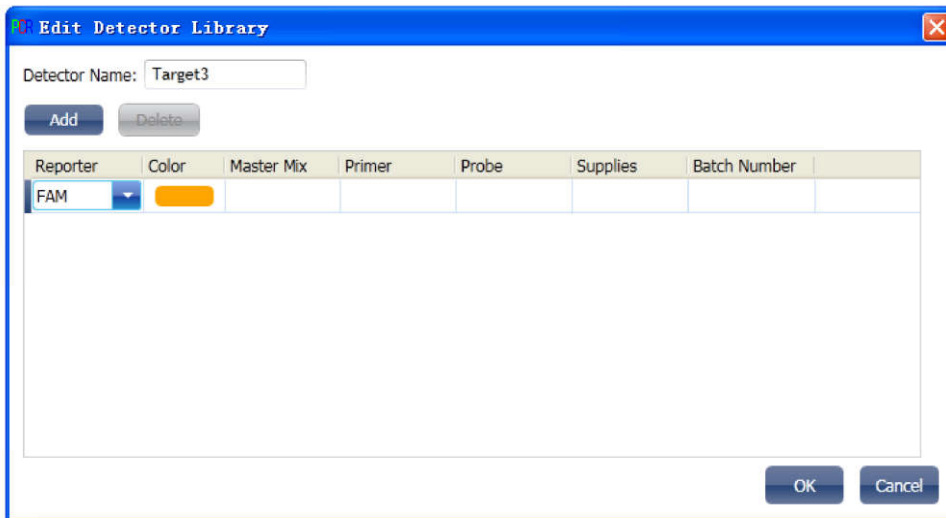
1. Click Setup ► Plate





2. Set up the inspection criteria of the reaction plate



a. 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.



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

Property	Name	Concentration	Concentration unit
	Unknown	NO	Copies/ml
	Standard	YES	IU/ml

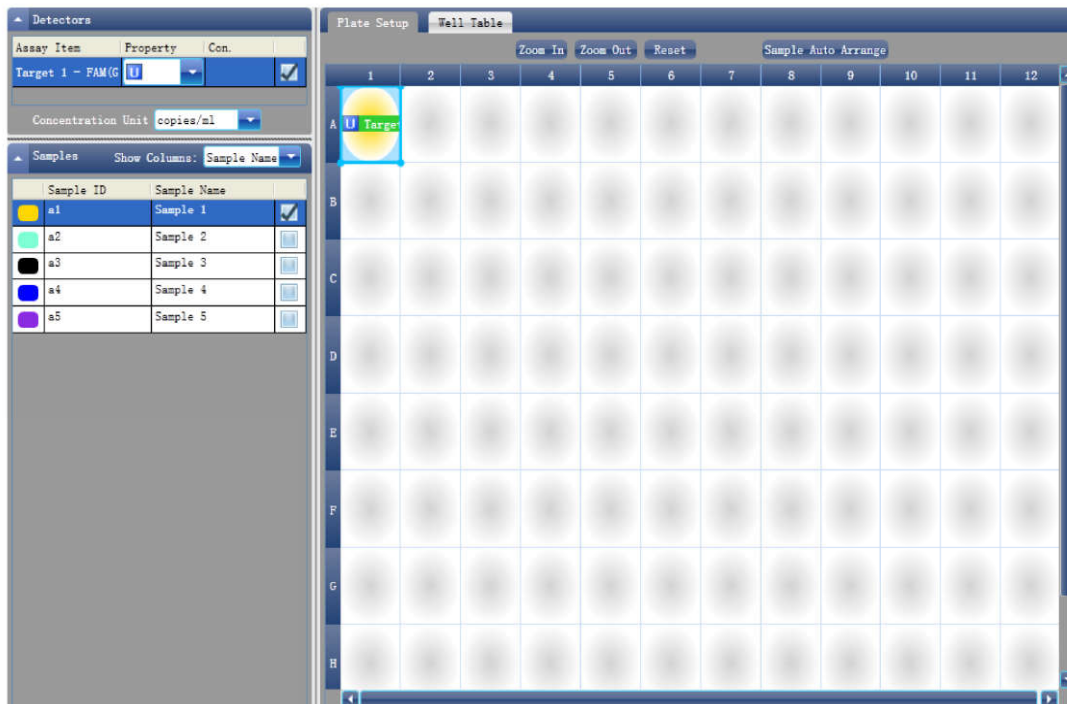
	Negative	NO	Fg/ml
	Positive	NO	Pg/ml

c. Select a sample and the list displayed will change

d. Zoom-In, Zoom-Out and reset the reaction plate.

e. Sample Auto Arrange

f. Check Well Table



#	Well	Sample Id	Assay Item	Property	Dye	Con.
1	A01		Target1	Unknown	FAM	
2	A02					
3	A03					
4	A04					
5	A05					
6	A06					
7	A07					
8	A08					
9	A09					
10	A10					
11	A11					
12	A12					

4.1.5 Programme Setting

1. Click Setup ► Programme



2. Run Programme Setup

- a. Create new stage: the user can create a new **Hold Stage**, **Cycling Stage** or **Melting Stage**

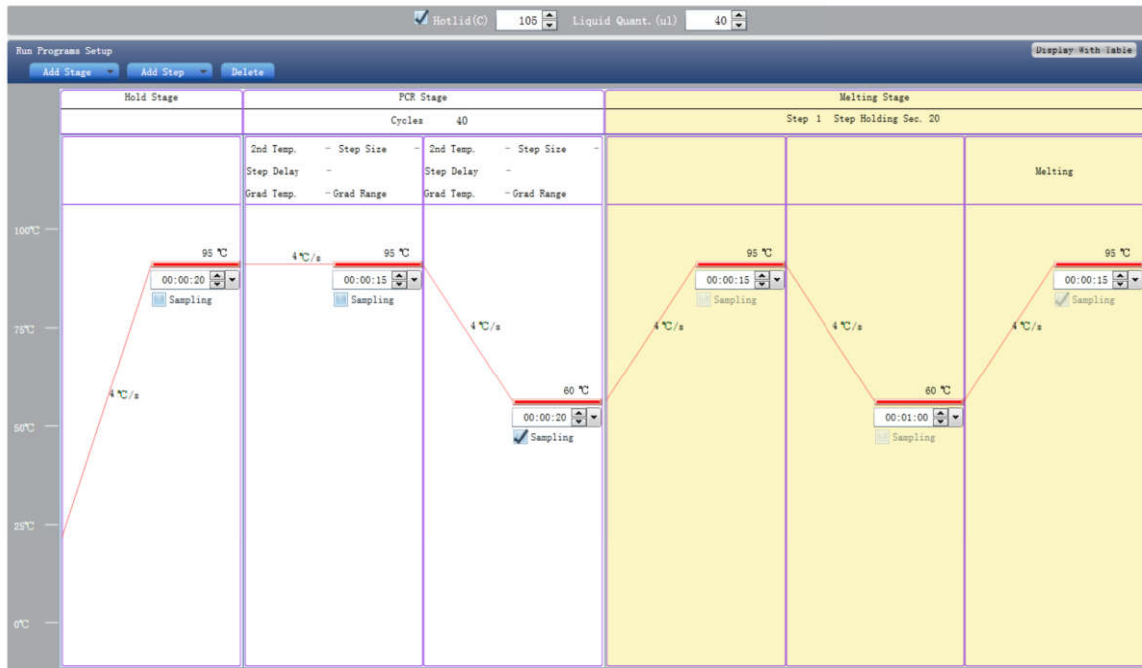
The user can also click **Add Stage** directly and the default will be creating a new **Cycling Stage**.

- b. 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.

- c. Delete: the user can delete the currently selected step or stage
- d. Display form: click **Display With Table** ► new window will pop up ► the details of the current experiment will be displayed in a table.
- e. Set up the experimental data of the hold stage, cycling stage and melting stage melting section
- f. Set up the hot-lid temperature and liquid volume

LineGene 9600 Plus Fluorescent Quantitative Detection System



4.2 Prepare for Reaction

Start
▼
Design Experiment
▼
Prepare for the Reaction
▼
Run the Experiment
▼
Experiment Analysis
▼
Experiment Report
▼
Data Export
▼
End

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 4.1.4.

4.3 Run the Experiment

Start
▼
Design Experiment
▼
Prepare for the Reaction
▼
Run the Experiment
▼
Experiment Analysis
▼
Experiment Report
▼
Data Export
▼
End

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, make checks and follow the procedure for correct start up of the system.

The green lamp of the run switch will be lit and the system will be ready to run.

Caution: Before running the programme, push the module smoothly until the locking sound is heard and the alarm lamp is switched off.

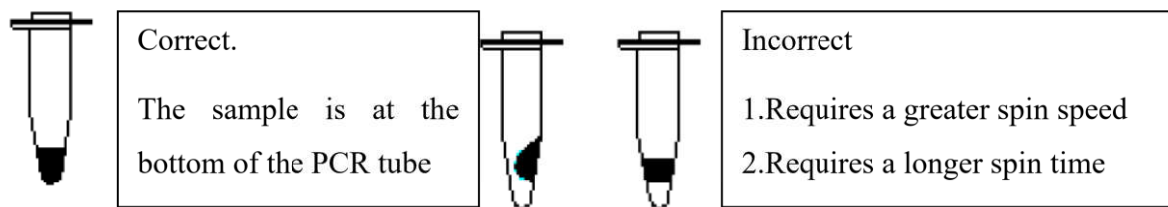
If the module is pulled out or is improperly closed, the software will produce a pop-up warning and the alarm lamp will light up.

In this case, the temperature programme can be run but the fluorescence scanning data would become invalid.

4.3.1 Preparation for reagent sample

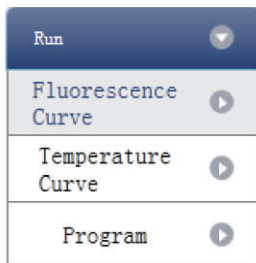
- Preparation for reagent: The LineGene 9600 Plus Fluorescent Quantitative Detection System uses 0.2ml PCR tubes, Strip tubes or 96 well PCR Microplate to conduct the reaction. The recommended reaction volume is 10µl~50µl for an optimal reaction system.
- The tube, Strip tube or 96 well PCR Microplate, must have an optically clear bottom.

- 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.
- To insert test tube: If individual tubes or strip tubes are used, and the sample quantity is less than the maximum capacity of the instrument, it is recommended the sample tubes should be evenly distributed across the block as far as possible. This will create even pressure across the hot-lid, ensuring consistent pressure on all the tubes during running, which greatly improves temperature consistency across all sample tubes.



4.3.2 Run Fluorescence Curve

1. Click Run ► Fluorescence Curve

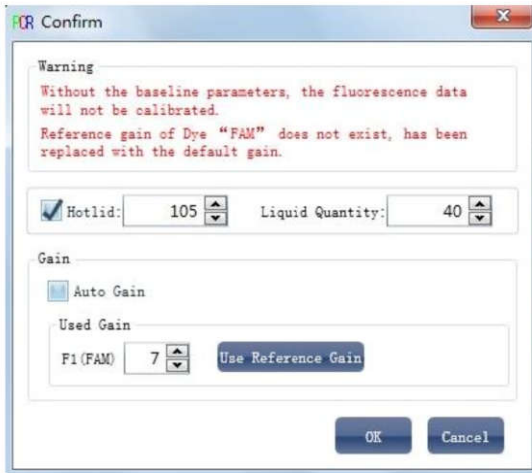


2. Click Start Run



3. Operating confirmation
 - a. Modify hot-lid temperature and liquid quantity (sample volume).
 - b. Gain (baseline) parameter setting

c. Target fluorescence value setting

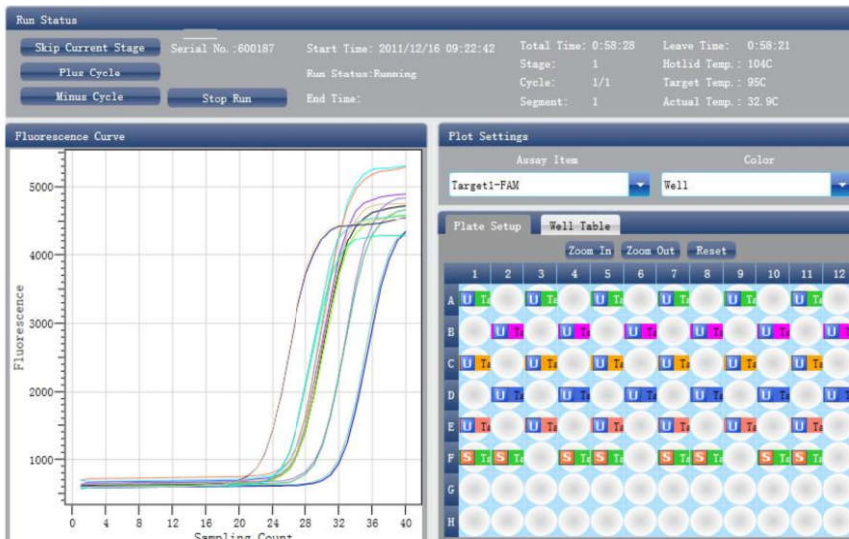


4. After it starts operating, the user can:

- a. Skip the current stage
- b. Add a cycle
- c. Delete a cycle
- d. Stop run

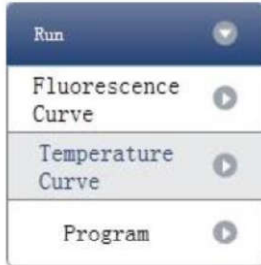
5. Plot display setting

- a. Assay item
- b. Plot colour

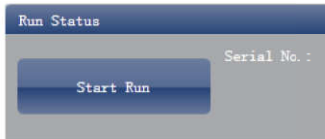


4.3.3 Run Temperature Curve

1. Click Run ► Temperature Curve

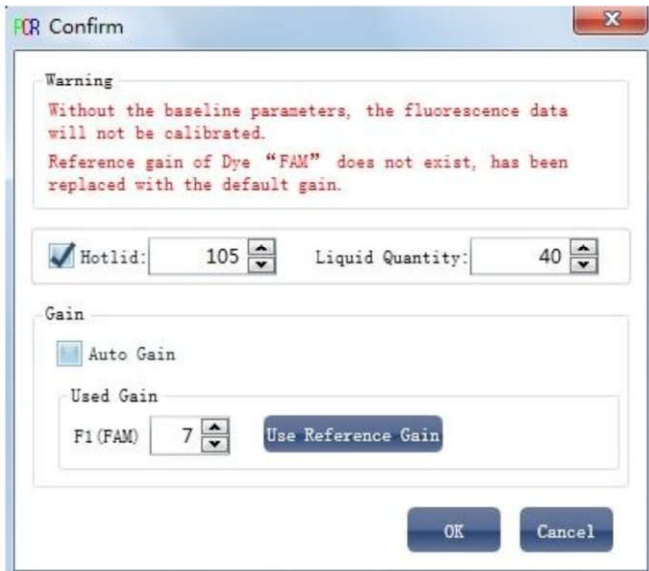


2. Click Start Run



3. Operating confirmation

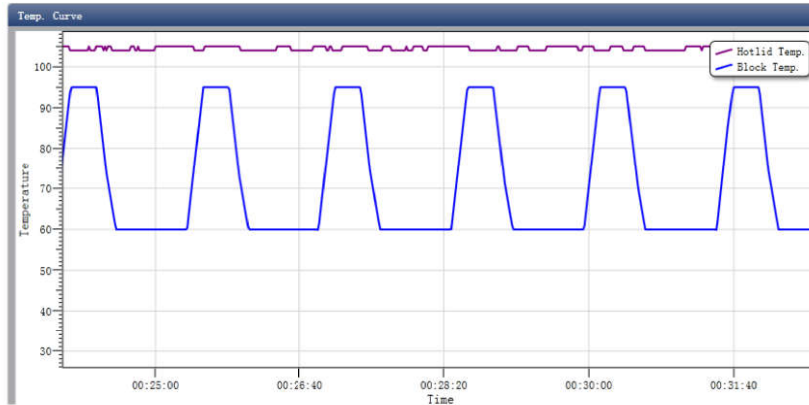
- a. Modify hot-lid temperature and liquid quantity (sample volume).
- b. Gain (baseline) parameter setting
- c. Target fluorescence value setting



4. After it starts running, the user can:

- a. Skip the current stage

- b. Add a cycle
- c. Delete a cycle
- d. Stop run



4.3.4 Programme Setting

The user can only check the programme setting but cannot make modifications.

4.3.5 Working state indication lamps on instrument

The panel at the right of the instrument is fixed with 1 lamp and the colors related to the system state during the running of a programme:

- **Standby:** The indicator lamp lights **blue**, which denotes that the entire machine is ready to operate.
- **Running:** The indicator lamp lights **green**, which denotes that the entire machine is running a programme.
- **Error:** The indicator lamp lights **red**, which denotes that the instrument has detected a fault.

Caution: For prolonged shutdown, switch off the power at the back of the instrument and at the socket. When switched on again, the hot-lid and module will revert to the default settings.

The front cover of the instrument is fixed with a self-locking key to control energizing of its internal control system:

- Run Switch: running/standby switch.

- After pressing this key, the green indicator lamp is lit on the instrument, the internal system is energized, and the instrument is ready to run the programme.
- After pressing this key again, the key will spring out, the green indicator lamp goes off, the instrument internal system is de-energized and the system is under standby.

Caution: The run switch is for ease of operation and is merely used for temporary or short-term closing down of the control system. When the system is under the standby state, the instrument internal AC circuit remains live.

4.3.6 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 programme, the PCR detection system will terminate the current programme. The instrument should be switched off and then re-started.

4.4 Experiment Analysis

Start
▼
Design Experiment
▼
Prepare for the Reaction
▼
Run the Experiment
▼
Experiment Analysis
▼
Experiment Report
▼
Data Export
▼
End

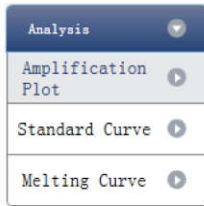
This section describes how to view the experiment analysis results after running an experiment and adjusting parameters for re-analysis.

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

4.4.1 Check Results

4.4.1.1 Check the Amplification Plot

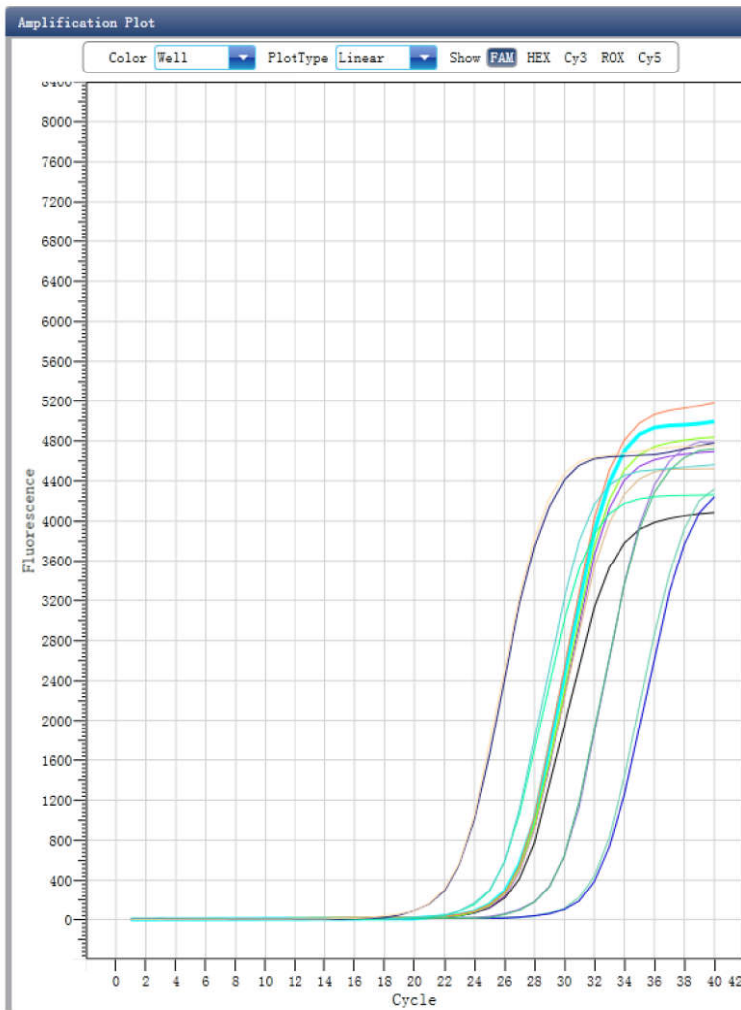
1. Click Analysis ► Amplification Plot



2. Check the amplification curve

- a. Set up colour
- b. Set up plot type
- c. Set up show dye

When the background colour of a dye name is blue, it will be displayed; while white indicates it will not be displayed.



3. Check the reaction plate

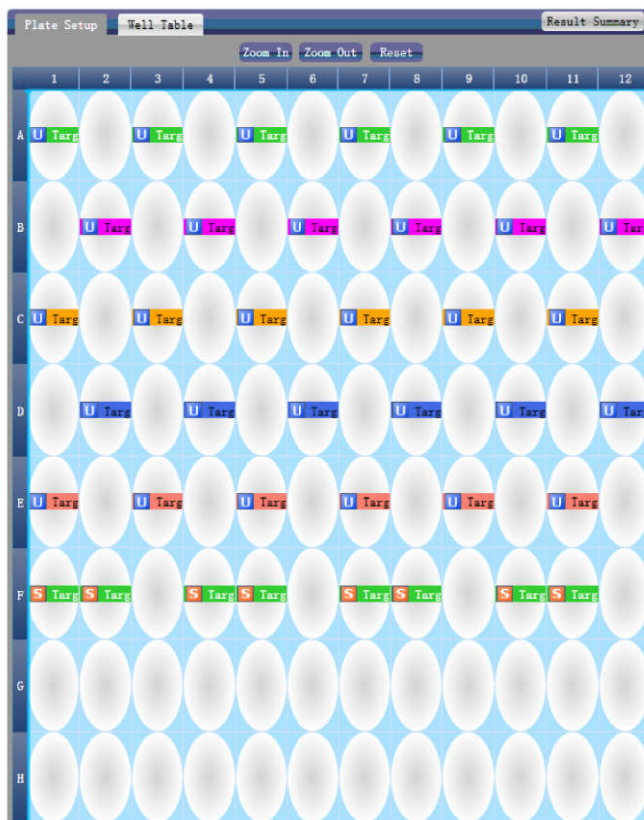
- a. Select reaction plate well site and check corresponding well site curve

The default is all wells are selected

- b. Zoom-In, Zoom-Out and reset the reaction plate

- c. Check well table

- d. Check results summary



4. Set up assay

- a. Set up assay

- b. Set up threshold

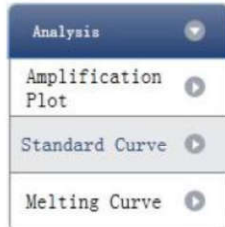
- c. Set up automatic baseline

When the threshold value is not automatic, the user cannot set up the automatic baseline



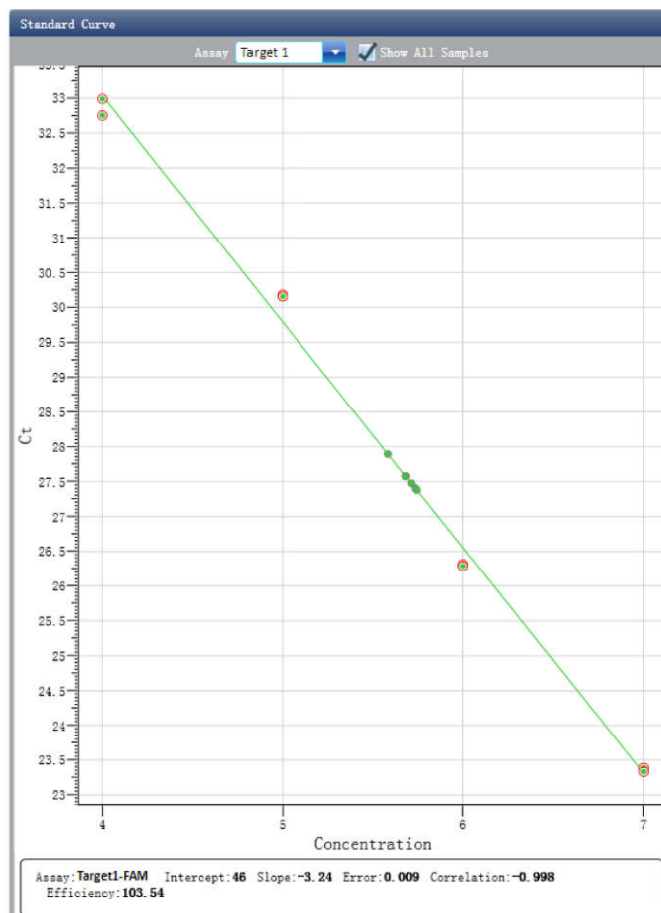
4.4.1.2 Check Standard Curve

1. Click Analysis ► Standard Curve



2. Check standard curve

a. Set up assay

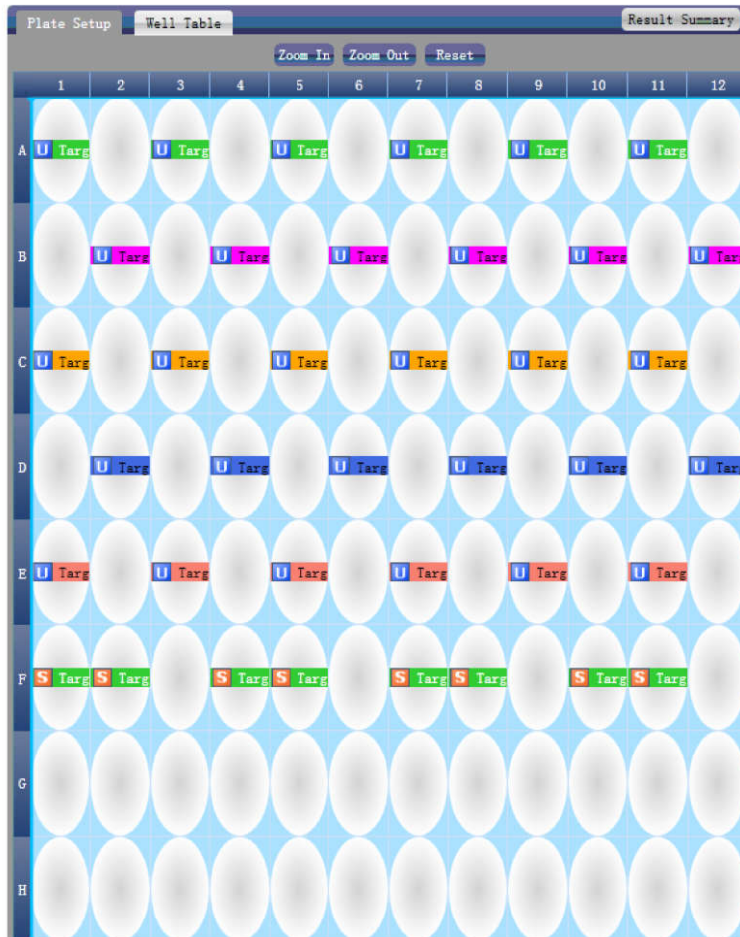


3. Check the reaction plate

a. Select reaction plate well site and check corresponding well site curve

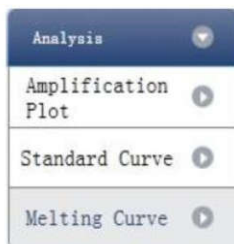
The default is all wells are selected

- b. Zoom-In, Zoom-Out and reset the reaction plate
- c. Check well table information
- d. Check results summary



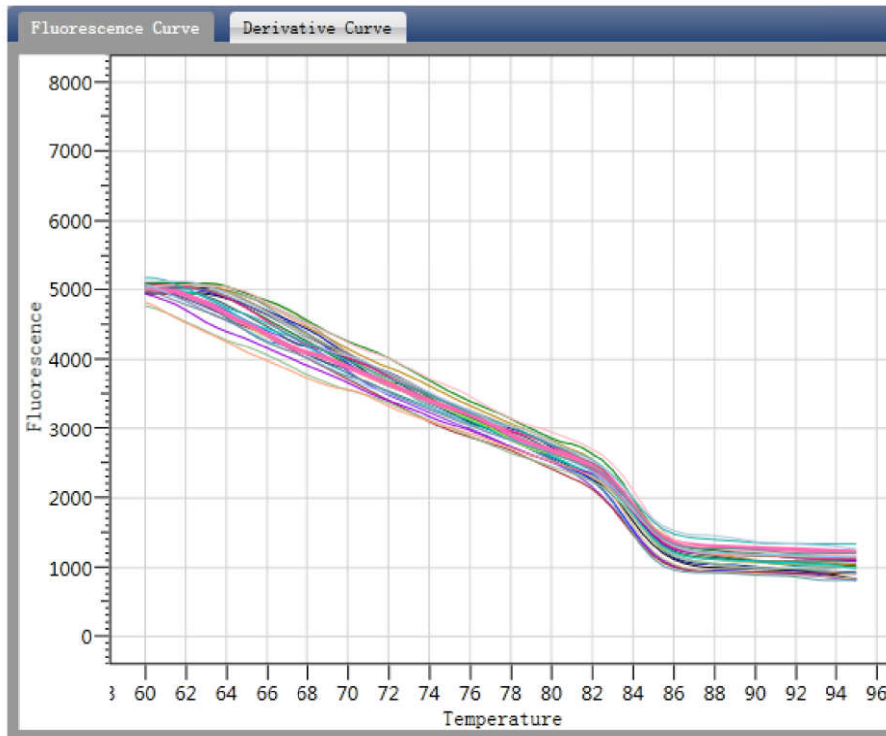
4.4.1.3 Check Melting Curve

- 1. Click Analysis ► Melting Curve



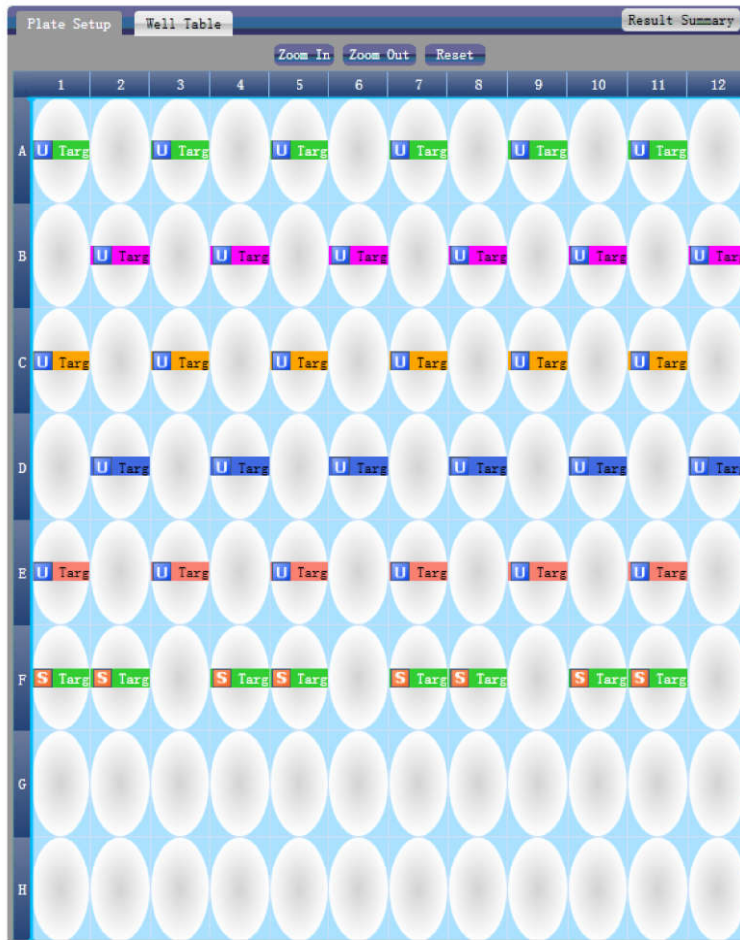
2. Check the melting curve

- a. Check the fluorescence curve
- b. Check the derivative curve
- c. Set up colour



3. Check the reaction plate

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



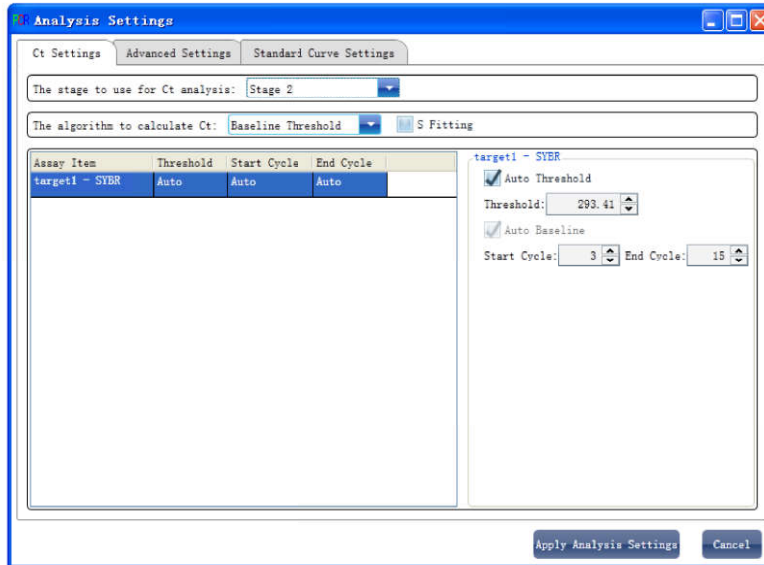
4. Set up assay
 - a. Set up assay
 - b. Set up colour



4.4.2 Adjusting Parameters and Re-analysis

1. Click **Analysis Settings** ► the Analysis Settings dialog box will pop up
 - a. Adjust the start cycle and end cycle of the baseline
 - b. Adjust Ct analysis algorithm
 - c. Set up the use of S fitting

- d. Set up the stage to use for Ct analysis
- e. Set up the automatic threshold value
- f. Advanced setting
- g. Standard curve setting



4.5 Experiment Report

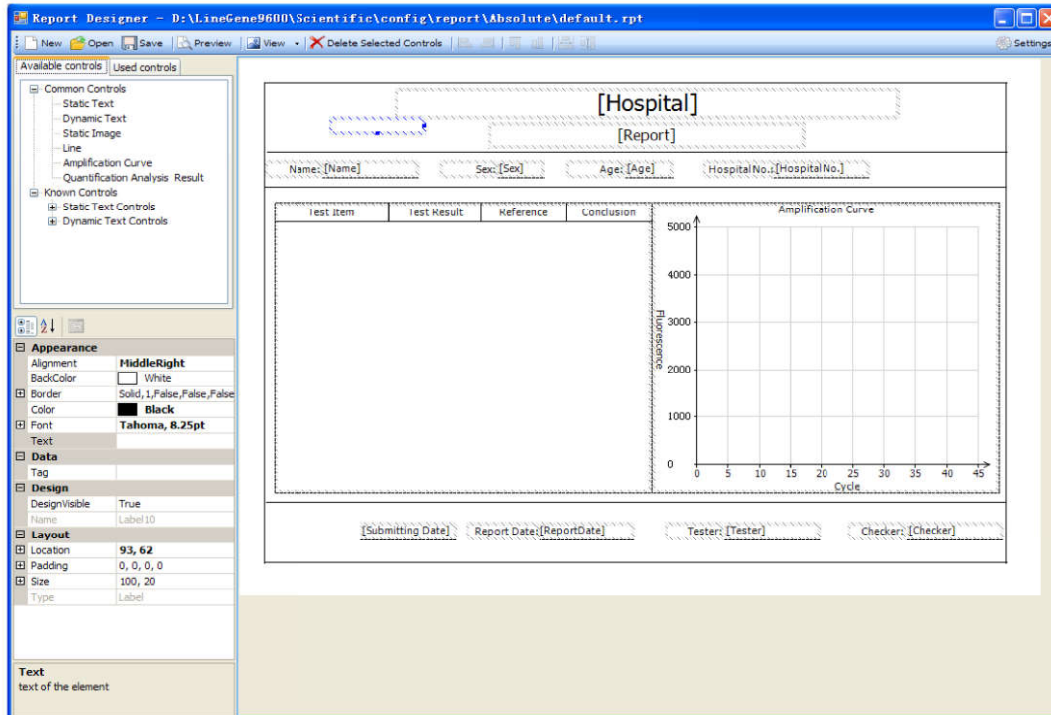
Start
▼
Design Experiment
▼
Prepare for the Reaction
▼
Run the Experiment
▼
Experiment Analysis
▼
Experiment Report
▼
Data Export
▼
End

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

4.5.1 Designing a Report Template

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

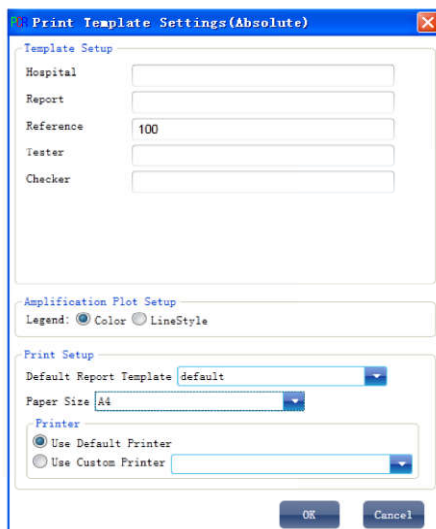
The report consists of controls and the user can add, modify and delete controls. Available controls include Static Text, Dynamic Text, Line, Static Image, Amplification curve and Quantification Analysis Results.



4.5.2 Print Setting

1. Click **Report** ► **Print Template Setting** ► the Print Template Setting window will open

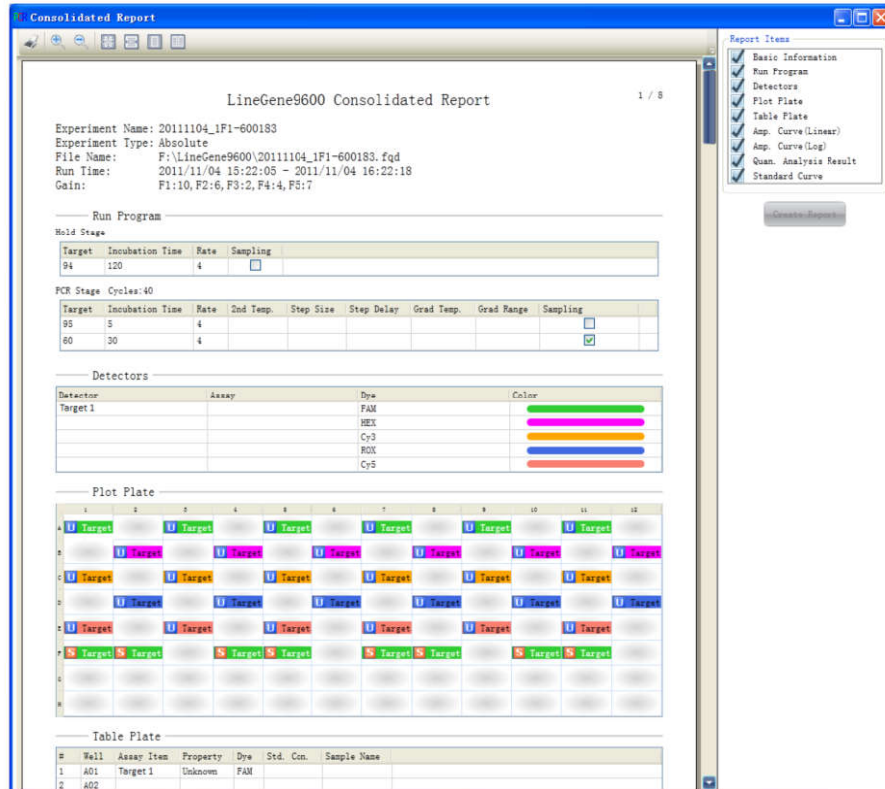
The user can set up the laboratory name, report name, reference value, tester, checker, amplification plot, default report template and paper size.



4.5.3 Comprehensive Report

1. 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..



4.5.4 Report Printing

1. Click **Report** ► **Report Print**

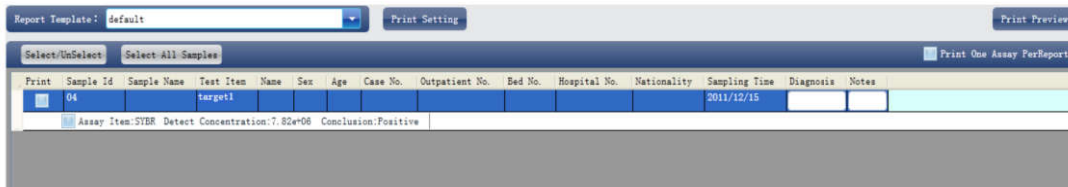


2. Report print setting

- a. Set up report template
- b. Print setting (please refer to Section 5.2)
- c. Select items to print

d. Print preview

e. Print the report

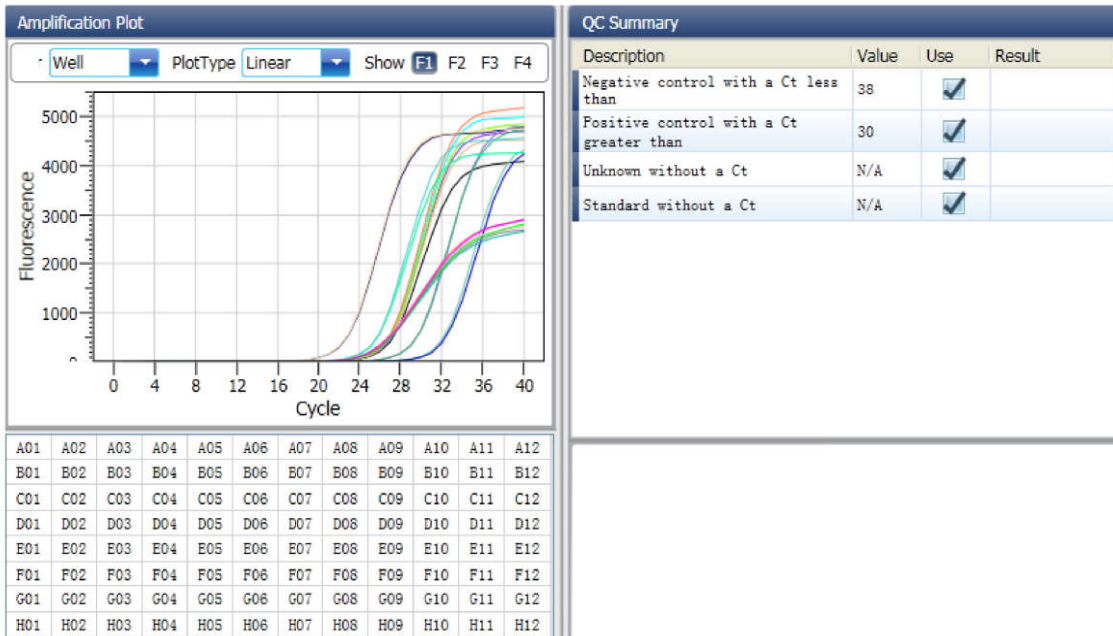


4.5.5 QC Summary

1. Click Report ► QC Summary



2. Check the QC summary



4.6 Data Export

Start
▼
Design Experiment
▼
Prepare for the Reaction
▼
Run the Experiment
▼
Experiment Analysis
▼
Experiment Report
▼
Data Export
▼
End

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

4.6.1 Export to Database

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

4.6.2 Experiment Filing

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



2. Experiment filing

Click **Data Summary** ► **Archived Experiment** ► export the filed experiment file

The suffix of the filed experiment file is .fqh

4.6.3 Export Experiment Data to EXCEL

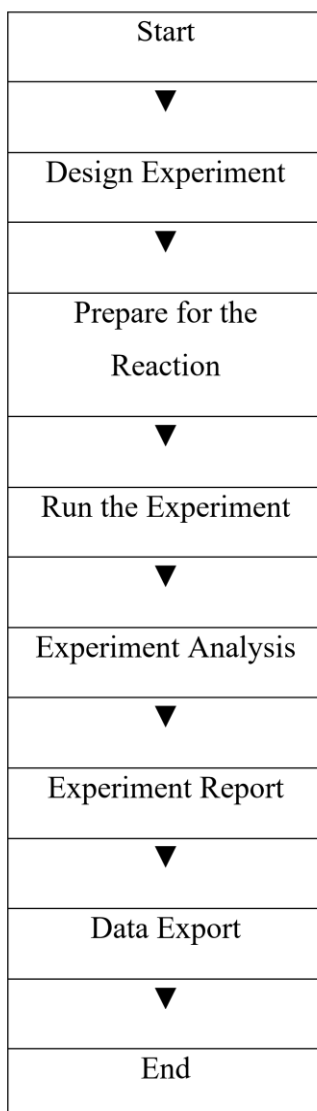
Click **Data Summary** ► **Export Experiment** ► **Export Experiment to Excle** ► the exported experiment data will generate EXCEL file

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 5 Relative Quantitative

5.1 Design Experiment



This section describes how to design a relative quantitative experiment and covers creating new relative quantitative experiment, inspection item

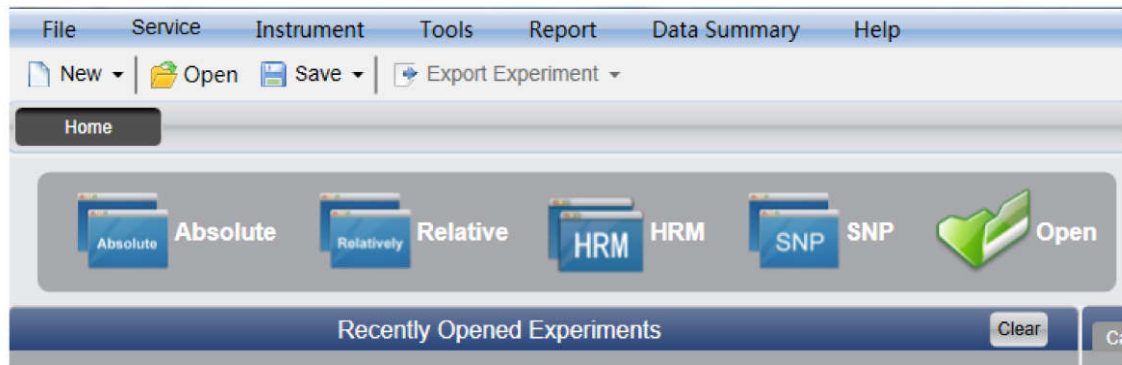
5.1.1 Create New Relative Quantitative Experiment

1. Click **Relative** on **Home** interface and create Relative Quantitative Experiment window.

Relative quantitative experiment can be also created by:

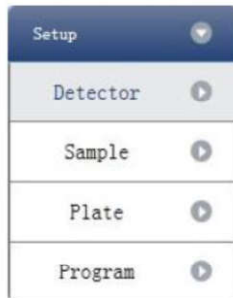
a. Clicking **New ► Relative** on the toolbar

b. Clicking **File** ► **New** ► **Relative** on the menu bar



5.1.2 Detector Setting

1. Click Setup ► Detector



2. Input Experiment Properties

Input the Experiment name, User name and Comment in the basic information column.

3. Inspection Item Setting

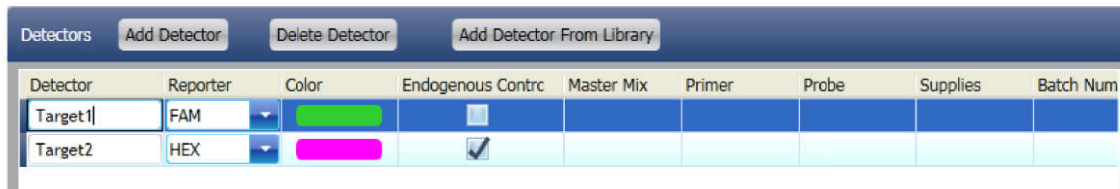
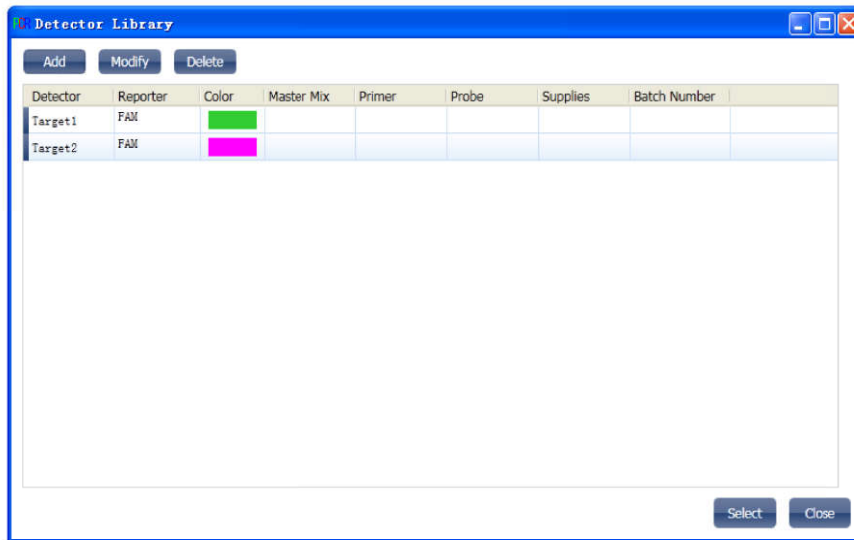
a. Set up the Detector, Assay, Dye and Colour.

b. Add detector

c. Delete detector

d. Add detector from library

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

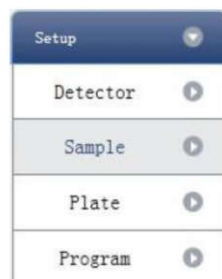


4. Set up reference dye



5.1.3 Sample Information Setting

1. Click Setup ► Sample



2. Add sample information

- a. Itemized addition: input ID in **Sample ID** ► press **Enter** ► add information for one sample.

- b. Batch addition: click **Batch Add** ► the Batch Add window will pop up



3. Delete sample information

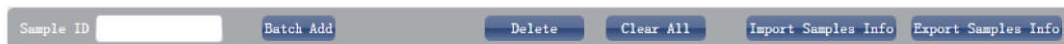
a. Itemized deletion: select one sample ► click **Delete** ► delete the selected sample information

b. Delete all: click **Clear All** ► delete all sample information

4. Import/Export sample information

a. Click **Import Sample Info** ► the File Import window will pop up ► import sample information file in CSV format

b. Click **Export Sample Info** ► the Save As window will pop up ► the sample information will be exported in CSV file format



5. Set up sample information

Samples				
Sample Id	Color	Sample Name	Sampling Time	Submitting Date
a1			2013-12-06	2013-12-06
a2			2013-12-06	2013-12-06
a3			2013-12-06	2013-12-06
a4			2013-12-06	2013-12-06
a5			2013-12-06	2013-12-06

5.1.4 Reaction Plate Setting

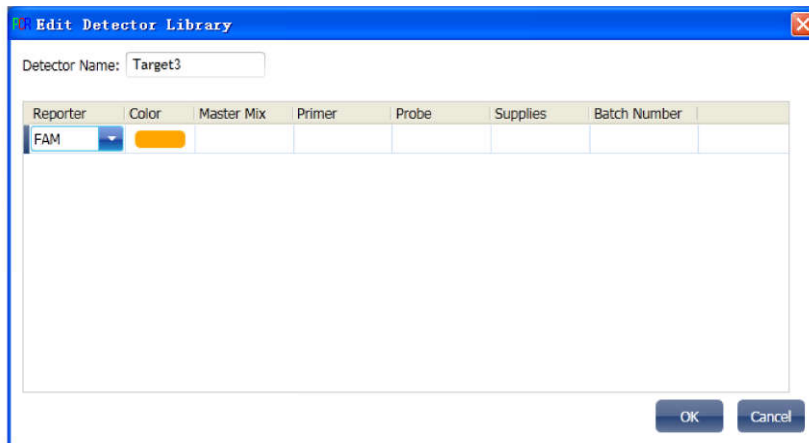
1. Click Setup ► Plate






2. Set up the inspection criteria of the reaction plate

a. 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.



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

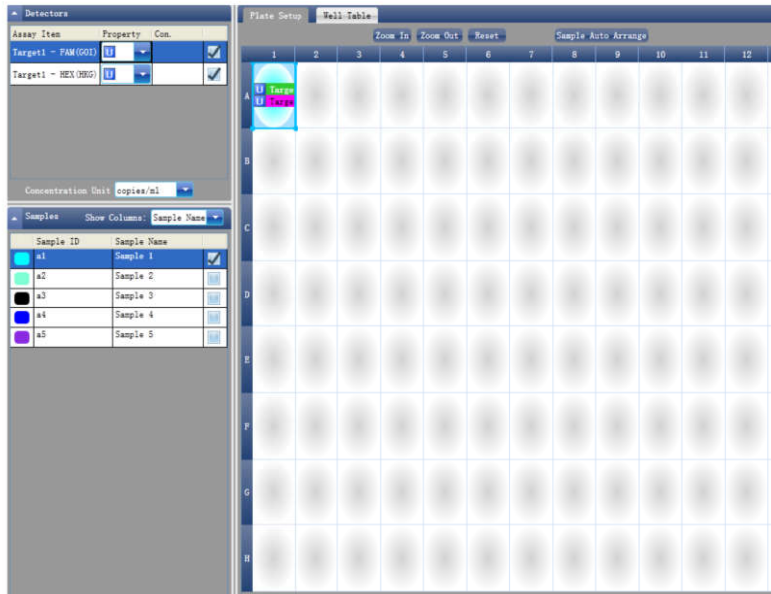
Property	Name	Concentration	Concentration unit
	Unknown	NO	Copies/ml
	Standard	YES	IU/ml
	Negative	NO	Fg/ml
			Pg/ml

c. Select a sample and the list displayed will change

d. Zoom-In, Zoom-Out and reset the reaction plate.

e. Sample Auto Arrange

f. Check Well Table



#	Well	Sample Id	Assay Item	Property	Dye	Con.
1	A01		Target1	Unknown	FAM	
1	A01		Target2	Unknown	HEX	
2	A02					
3	A03					
4	A04					
5	A05					
6	A06					
7	A07					
8	A08					
9	A09					
10	A10					
11	A11					
12	A12					

5.1.5 Programme Setting

1. Click Setup ► Programme



2. Run Programme Setup

a. 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**.

b. Create new step: the user can create a new step **Before** or **After** the currently selected step

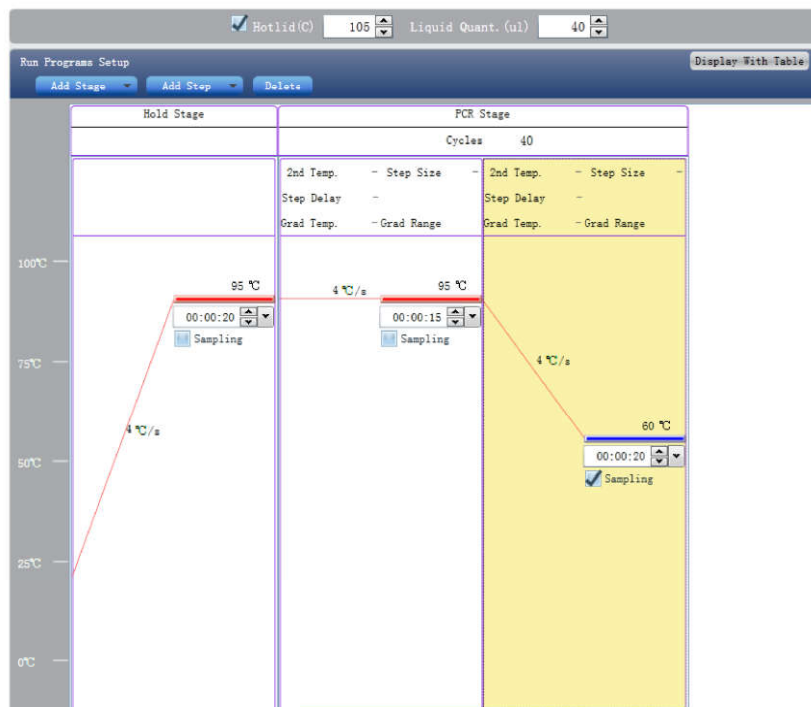
The user can also click **Add Step** and the default will be adding a new Step at the end of the currently selected stage or after the currently selected step.

c. Delete: the user can delete the currently selected step or stage

d. Display form: click **Display With Table** ► new window will pop up ► the details of the current experiment will be displayed in a table.

e. Set up the experimental data of the hold stage, cycling stage and melting stage melting section

f. Set up the hot-lid temperature and liquid volume



5.2 Prepare for Reaction

Start
▼
Design Experiment
▼
Prepare for the Reaction
▼
Run the Experiment
▼
Experiment Analysis
▼
Experiment Report
▼
Data Export
▼
End

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 5.1.4.

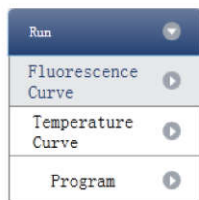
5.3 Run the Experiment

Start
▼
Design Experiment
▼
Prepare for the Reaction
▼
Run the Experiment
▼
Experiment Analysis
▼
Experiment Report
▼
Data Export
▼
End

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.

5.3.1 Run Fluorescence Curve

1. Click Run ► Fluorescence Curve

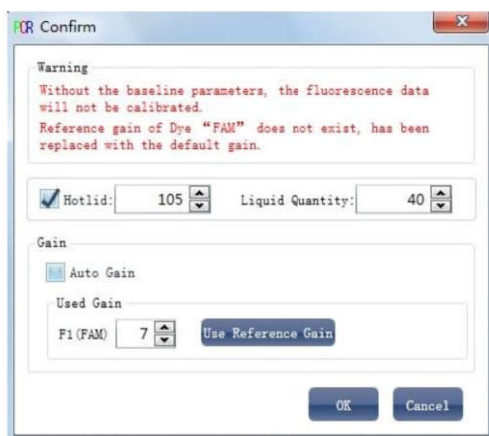


2. Click Start Run



3. Operating confirmation

- a. Modify hot-lid temperature and liquid quantity (sample volume)
- b. Gain (baseline) parameter setting
- c. Target fluorescence value setting

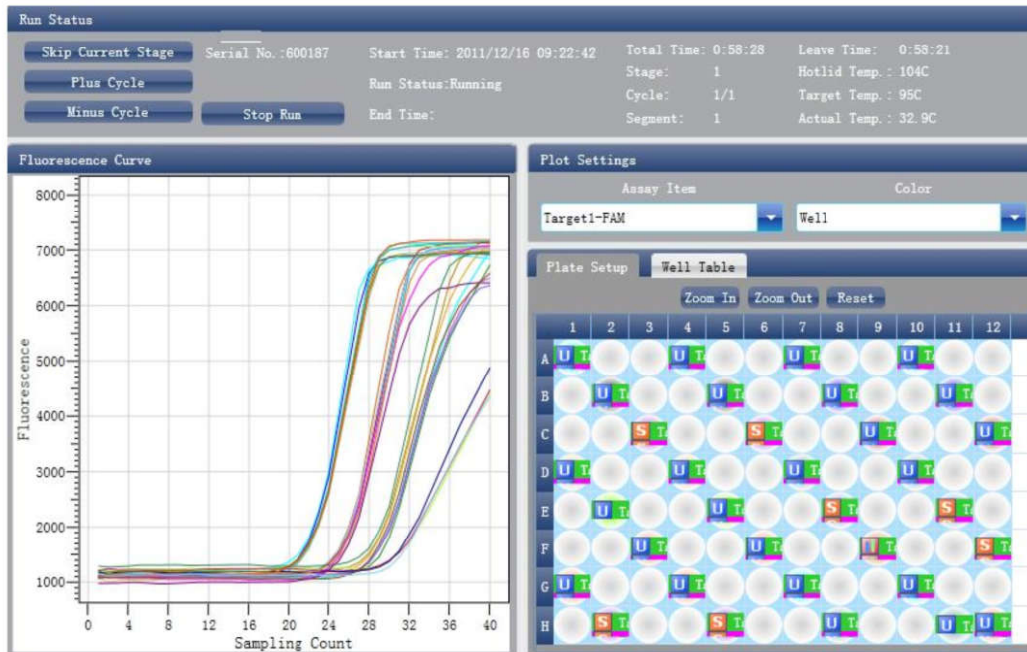


4. After it starts running, the user can:

- a. Skip the current stage
- b. Add a cycle
- c. Delete a cycle
- d. Stop run

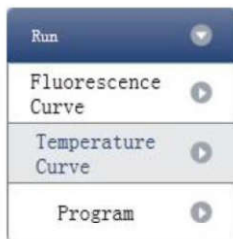
5. Plot display setting

- a. Assay item
- b. Plot colour

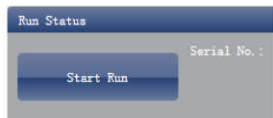


5.3.2 Run Temperature Curve

1. Click Run ► Temperature Curve

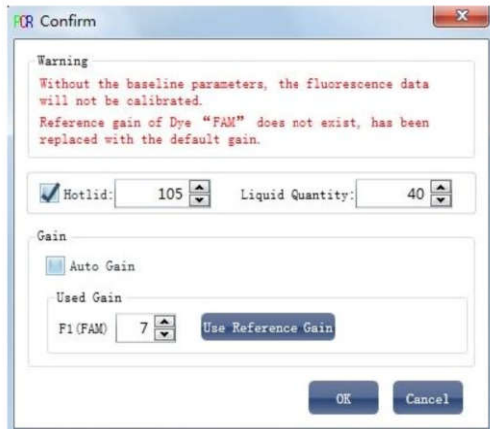


2. Click Run ► Start



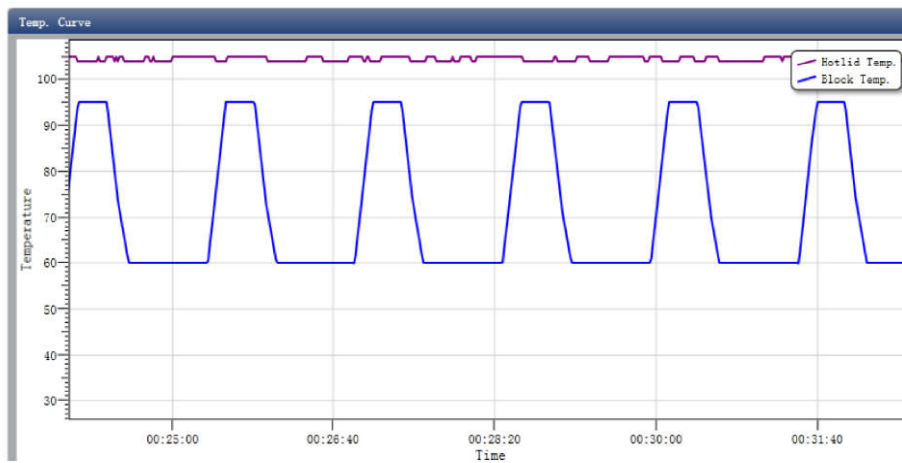
3. Operating confirmation

- a. Modify hot-lid temperature and liquid quantity (sample volume)
- b. Gain (baseline) parameter setting
- c. Target fluorescence value setting



4. After it starts running, the user can:

- a. Skip the current stage
- b. Add a cycle
- c. Delete a cycle
- d. Stop run



5.3.3 Programme Setting

The user can only check the programme setting but cannot make modifications.

5.4 Experiment Analysis

Start
▼
Design Experiment
▼
Prepare for the Reaction
▼
Run the Experiment
▼
Experiment Analysis
▼
Experiment Report
▼
Data Export
▼
End

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

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

5.4.1 Check Results

5.4.1.1 Check the Amplification Plot

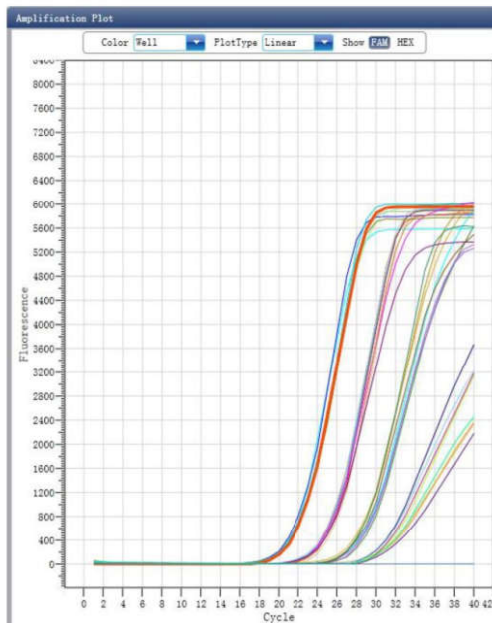
1. Click Analysis ► Amplification Plot



2. Check the amplification curve

- a. Set up colour
- b. Set up plot type
- c. Set up show dye

When the background colour of a dye name is blue, it will be displayed; while white indicates it will not be displayed.



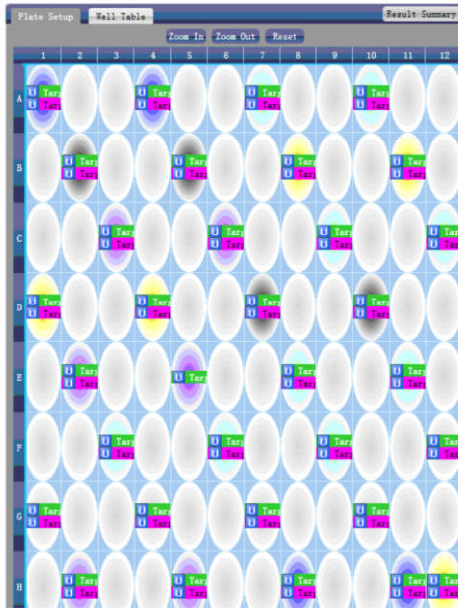
3. Check the reaction plate

- a. Select reaction plate well site and check corresponding well site curve

The default is all wells are selected

- b. Zoom-In, Zoom-Out and reset the reaction plate
- c. Check well table

d. Check results summary



4. Set up assay

a. Set up assay

b. Set up threshold

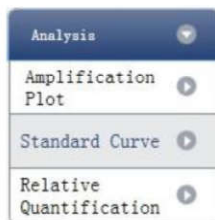
c. Set up automatic baseline

When the threshold value is not automatic, the user cannot set up the automatic Baseline



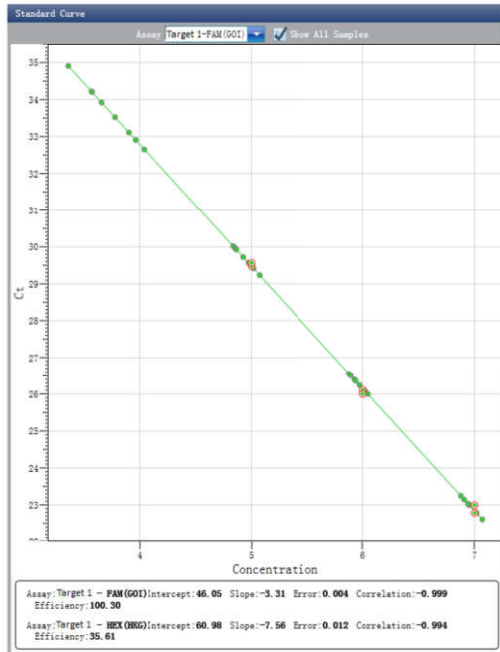
5.4.1.2 Check Standard Curve

1. Click Analysis ► Standard Curve



2. Check standard curve

a. Set up assay



3. Check the reaction plate

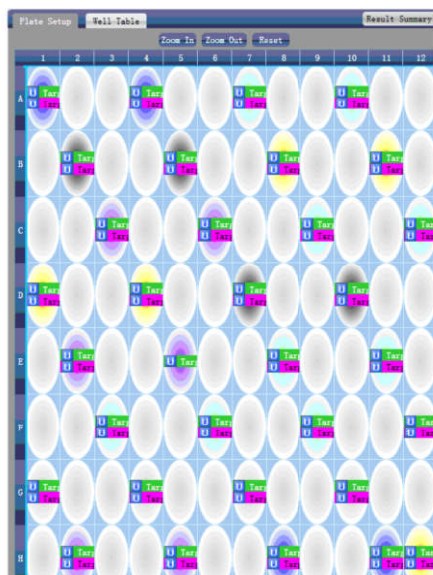
- a. Select reaction plate well site and check corresponding well site curve

The default is all wells are selected

- b. Zoom-In, Zoom-Out and reset the reaction plate

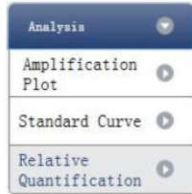
- c. Check well table

- d. Check results summary



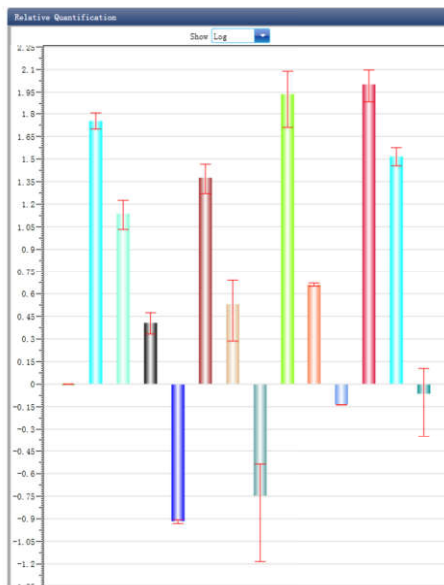
5.4.2 Check Relative Quantification

1. Click Analysis ► Relative Quantification



2. Check relative quantitative

a. Set up the show type

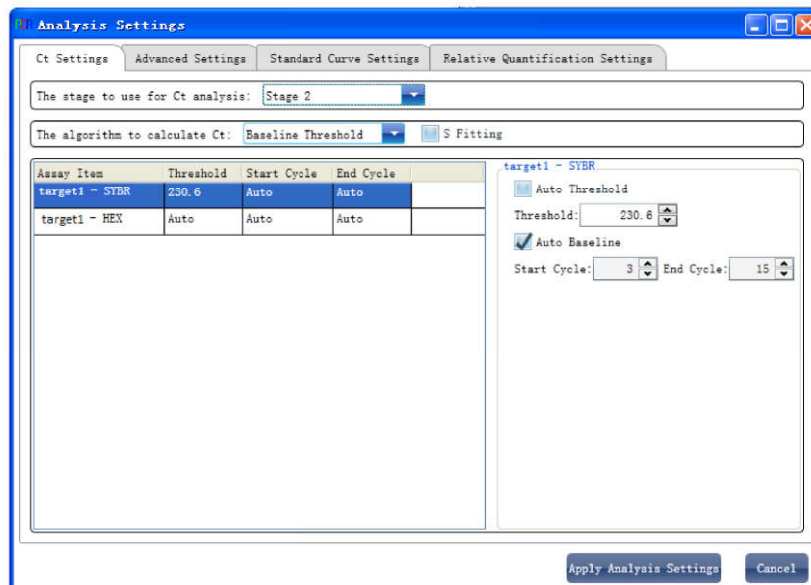


b. Check the analysis results

Sample Id	Assay Item	Property	GOI Aver. Con.	GOI Con. SD	HEG Aver. Con.	HEG 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	2.86e+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	0.19
09	target1	Unknown	8.44e+06	5.24e+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

5.4.3 Adjust Parameter Reanalysis

1. Click **Analysis Settings** ► the Analysis Settings dialog box will pop up
 - a. Adjust the start cycle and end cycle of the baseline
 - b. Adjust Ct analysis algorithm
 - c. Set up the use of S fitting
 - d. Set up the stage to use for Ct analysis
 - e. Set up the automatic threshold value
 - f. Advanced setting
 - g. Standard curve setting
 - h. Relative quantification setting



5.5 Experiment Report

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

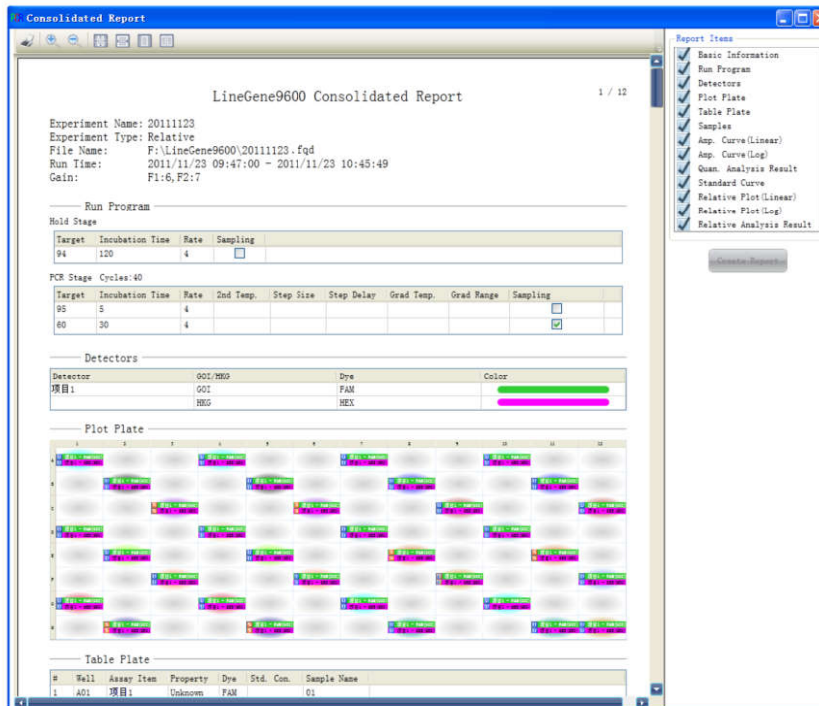
Start
▼
Design Experiment
▼
Prepare for the Reaction
▼
Run the Experiment
▼
Experiment Analysis
▼
Experiment Report
▼
Data Export
▼
End

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

5.5.1 Comprehensive Report

1. 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..

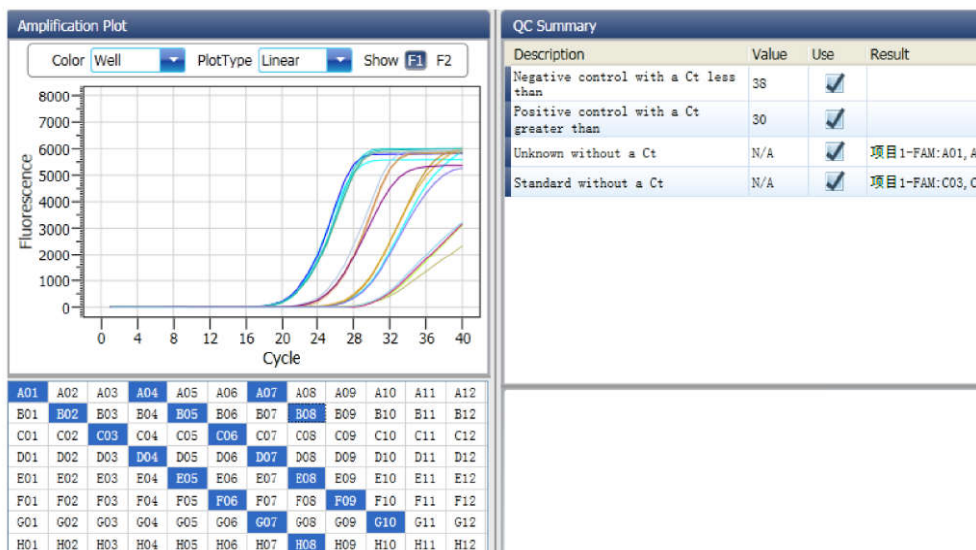


5.5.2 QC Summary

1. Click Report ► QC Summary



2. Check the QC summary



5.6 Data Export

Start
▼
Design Experiment
▼
Prepare for the Reaction
▼
Run the Experiment
▼
Experiment Analysis
▼
Experiment Report
▼
Data Export
▼
End

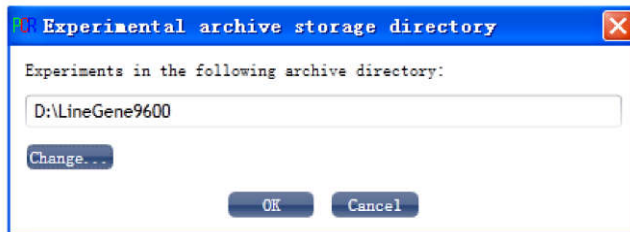
This section describes how to export data and covers exporting to a database, experiment filing and exporting the experiment data to EXCEL.

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 Filing

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



2. Experiment filing

Click **Data Summary** ► **Archived Experiment** ► export the filed experiment file

The suffix of the filed experiment file is .fqh

6.3 Export Experiment Data to EXCEL

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

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 SNP

6.1 Design Experiment

Start
▼
Design Experiment
▼
Prepare for the Reaction
▼
Run the Experiment
▼
Experiment Analysis
▼
Experiment Report
▼
Data Export
▼
End

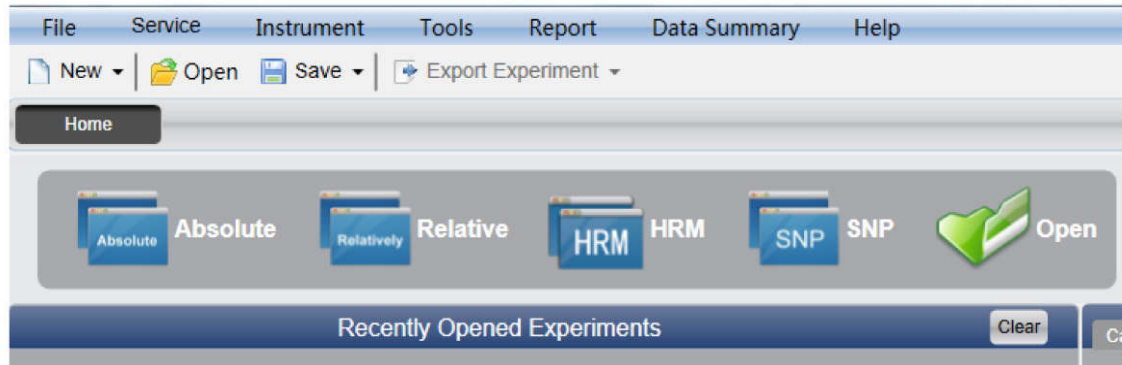
This section describes how to design an SNP experiment and covers creating a new SNP experiment, inspection item setting, sample information setting, reaction plate setting and programme setting.

6.1.1 Create SNP Experiment

1. Click **SNP** on **Home** interface and create SNP Experiment window.

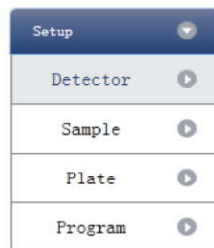
An SNP experiment can be also created by:

- a. Clicking **New ► SNP** on the toolbar
- b. Clicking **File ► New ► SNP** on the menu bar



6.1.2 Detector Setting

1. Click Setup ► Detector



2. Input basic information

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



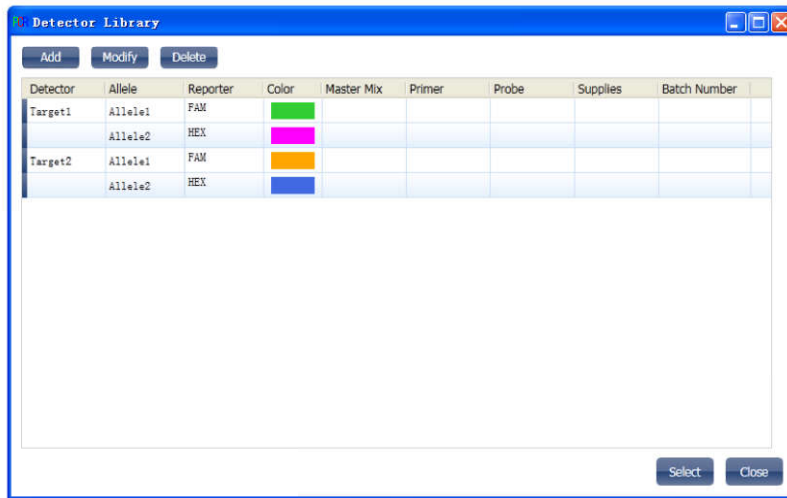
3. Inspection Item Setting

Set up the Detector, Allele, Dye and Colour.

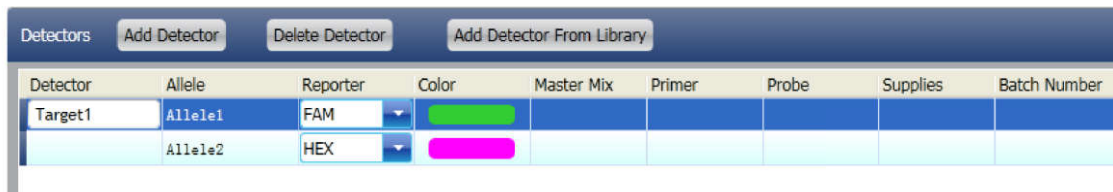
If necessary, the user can also:

- a. Add Detector
- b. Delete Detector
- c. 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.



d. Set up the item name, set up the dye name and set up the colour

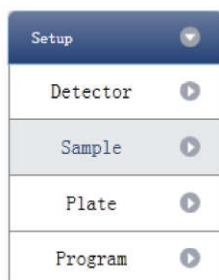


4. Set up reference dye



6.1.3 Sample Information Setting

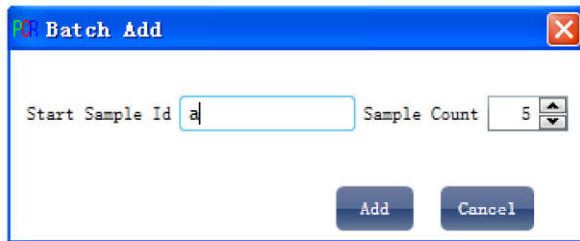
1. Click Setup ► Sample



2. Add sample information

a. Itemized addition: input ID in **Sample ID** ► press **Enter** ► add information for one sample

b. Batch addition: click **Batch Add** ► the Batch Add window will pop up

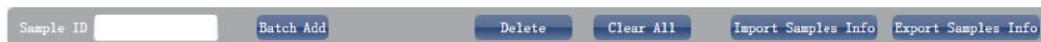


3. Delete sample information

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

4. Import/Export sample information

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

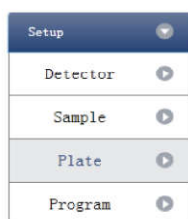


5. Set up sample information

Samples					
Sample Id	Color	Sample Name	Sampling Time	Submitting Date	
a1		Sample1	2013-12-06	2013-12-06	
a2		Sample2	2013-12-06	2013-12-06	
a3		Sample3	2013-12-06	2013-12-06	
a4		Sample4	2013-12-06	2013-12-06	
a5		Sample5	2013-12-06	2013-12-06	

6.1.4 Reaction Plate Setting

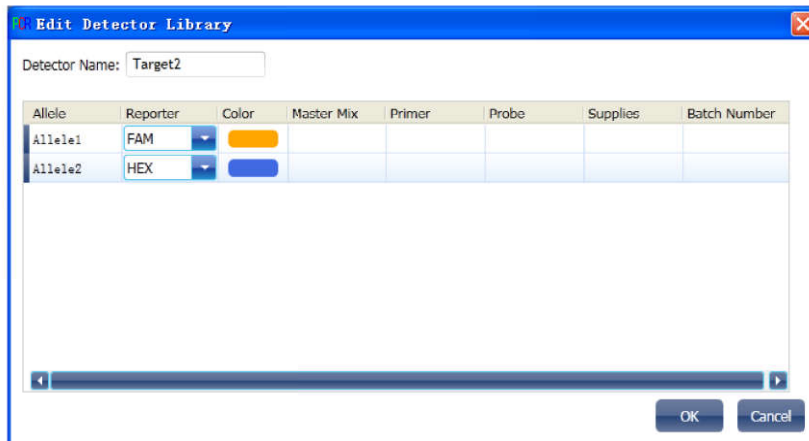
1. Click Setup ► Plate








2. Set up the inspection criteria of the reaction plate

a. 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.



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

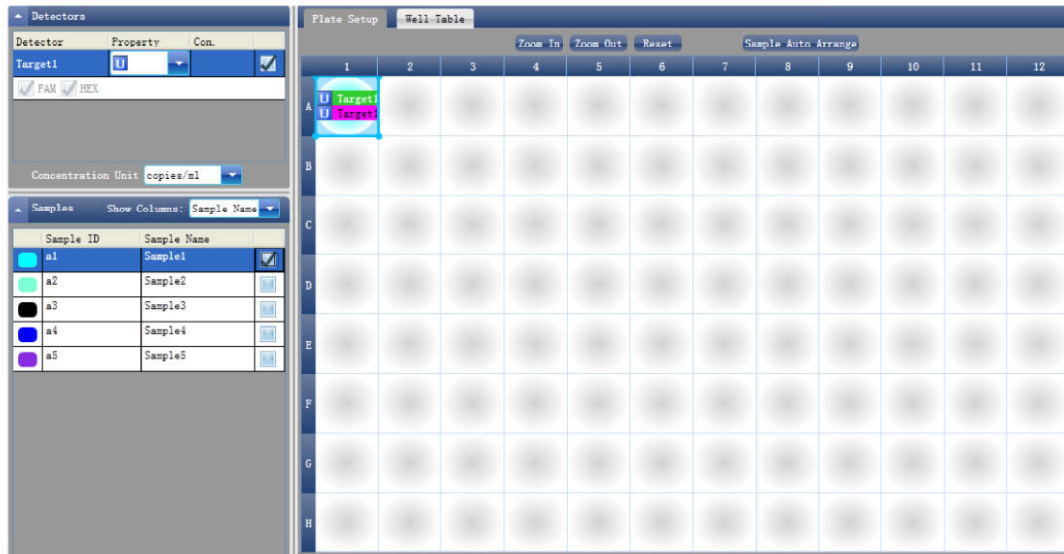
Property	Name	Concentration	Concentration unit
	Unknown	NO	Copies/ml
	Negative	NO	IU/ml
	Positive Allelic gene 1	NO	Fg/ml
	Positive Heterozygous	NO	Pg/ml
	Positive Allelic gene 2	NO	

c. Select a sample and the list displayed will change

d. Zoom-In, Zoom-Out and reset the reaction plate.

e. Sample Auto Arrange

f. Check Well Table



#	Well	Sample Id	Assay Item	Property	Dye
1	A01	a1	Target1	Unknown	FAM
1	A01	a1	Target1	Unknown	HEX
2	A02				
3	A03				
4	A04				
5	A05				
6	A06				
7	A07				
8	A08				

6.1.5 Programme Setting

1. Click Setup ► Programme



2. Run Programme Setup

a. 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**.

b. Create new step: the user can create a new step **Before** or **After** the currently selected step

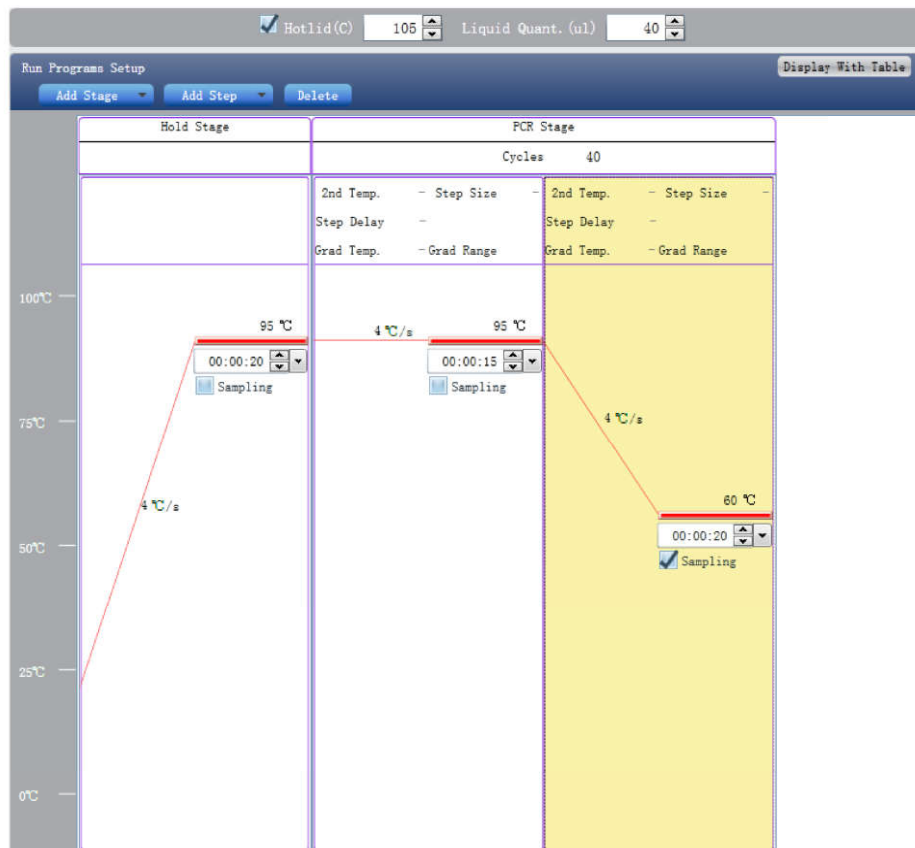
The user can also click **Add Step** and the default will be adding a new Step at the end of the currently selected stage or after the currently selected step.

c. Delete: the user can delete the currently selected step or stage

d. Display form: click **Display With Table** ► new window will pop up ► the details of the current experiment will be displayed in a table.

e. Set up the experimental data of the hold stage, cycling stage and melting stage melting section

f. Set up the hot-lid temperature and liquid volume



6.2 Prepare for Reaction

Start
▼
Design Experiment
▼
Prepare for the Reaction
▼
Run the Experiment
▼
Experiment Analysis
▼
Experiment Report
▼
Data Export
▼
End

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 6.1.4.

6.3 Run the Experiment

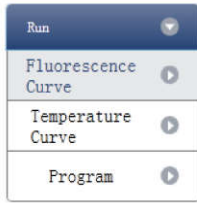
This section describes how to run the experiment after loading the reaction plate and covers the operating of fluorescence curve, the operating of temperature curve and programme setting.

Start
▼
Design Experiment
▼
Prepare for the Reaction
▼
Run the Experiment
▼
Experiment Analysis
▼
Experiment Report
▼
Data Export
▼
End

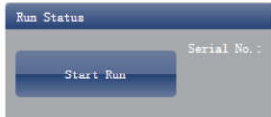
This section describes how to run/operate the experiment after loading the reaction plate and includes how to operate the fluorescence curve, the temperature curve and programming.

6.3.1 Run Fluorescence Curve

1. Click Run ► Fluorescence Curve

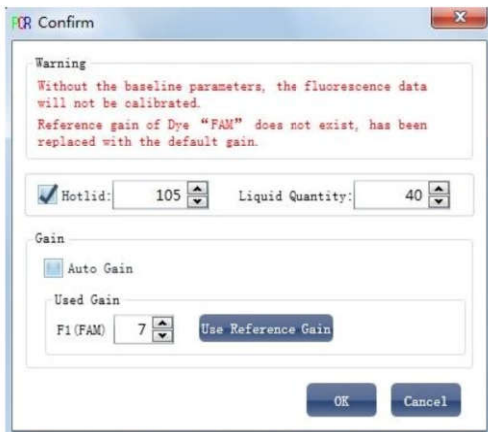


2. Click Start Run



3. Operating confirmation

- a. Modify hot-lid temperature and liquid quantity (sample volume).
- b. Gain (baseline) parameter setting
- c. Target fluorescence value setting



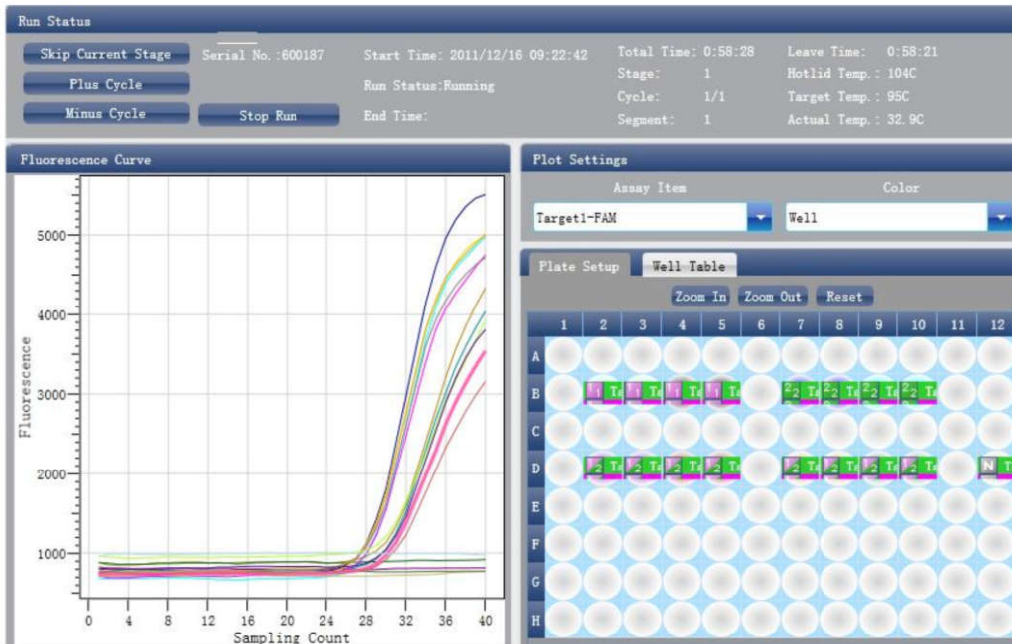
4. After it starts running, the user can:

- a. Skip the current stage
- b. Add a cycle
- c. Delete a cycle
- d. Stop run

5. Plot display setting

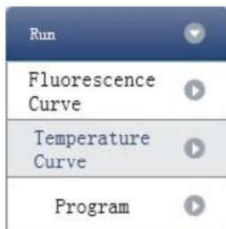
- a. Assay item

b. Plot colour

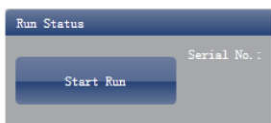


6.3.2 Run Temperature Curve

1. Click Run ► Temperature Curve



2. Click Start Run

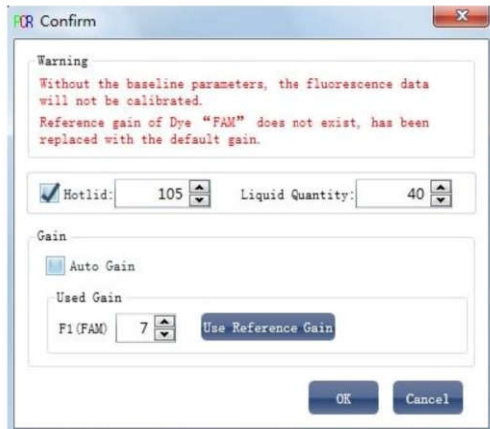


3. Operating confirmation

a. Modify hot-lid temperature and liquid quantity (sample volume).

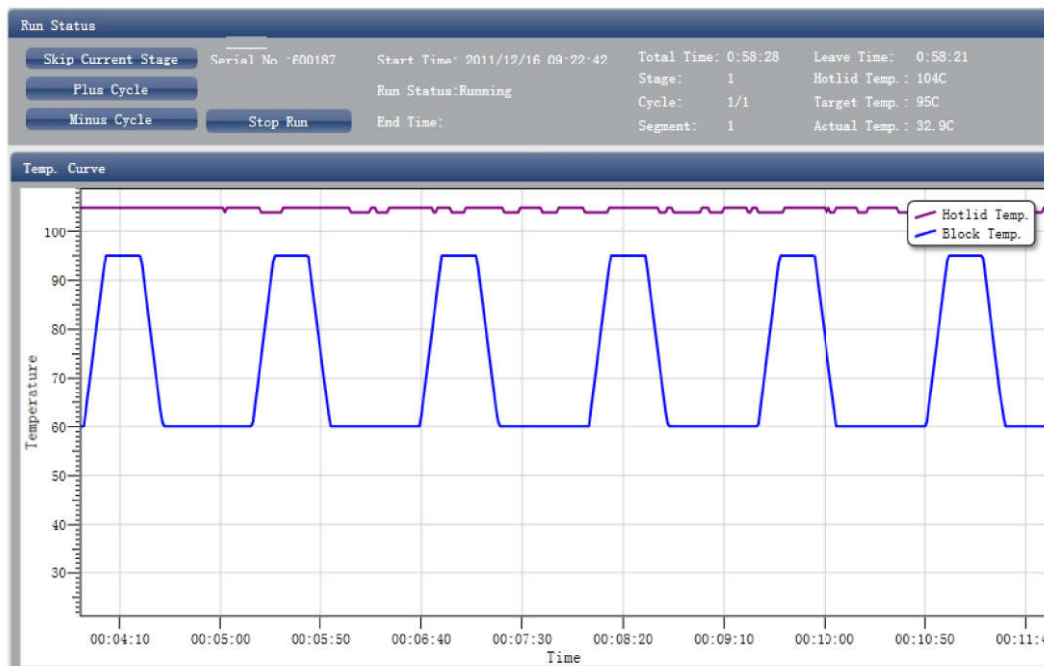
b. Gain (baseline) parameter setting

c. Target fluorescence value setting



4. After it starts running, the user can:

- a. Skip the current stage
- b. Add a cycle
- c. Delete a cycle
- d. Stop run



6.3.3 Programme Setting

The user can only check the programme setting but cannot make modifications.

6.4 Experiment Analysis

Start
▼
Design Experiment
▼
Prepare for the Reaction
▼
Run the Experiment
▼
Experiment Analysis
▼
Experiment Report
▼
Data Export
▼
End

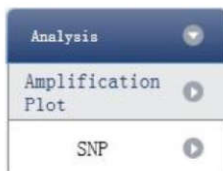
This section describes how to view the experiment analysis results after running an experiment and adjusting parameters for re-analysis.

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

6.4.1 Check Results

6.4.1.1 Check the Amplification Plot

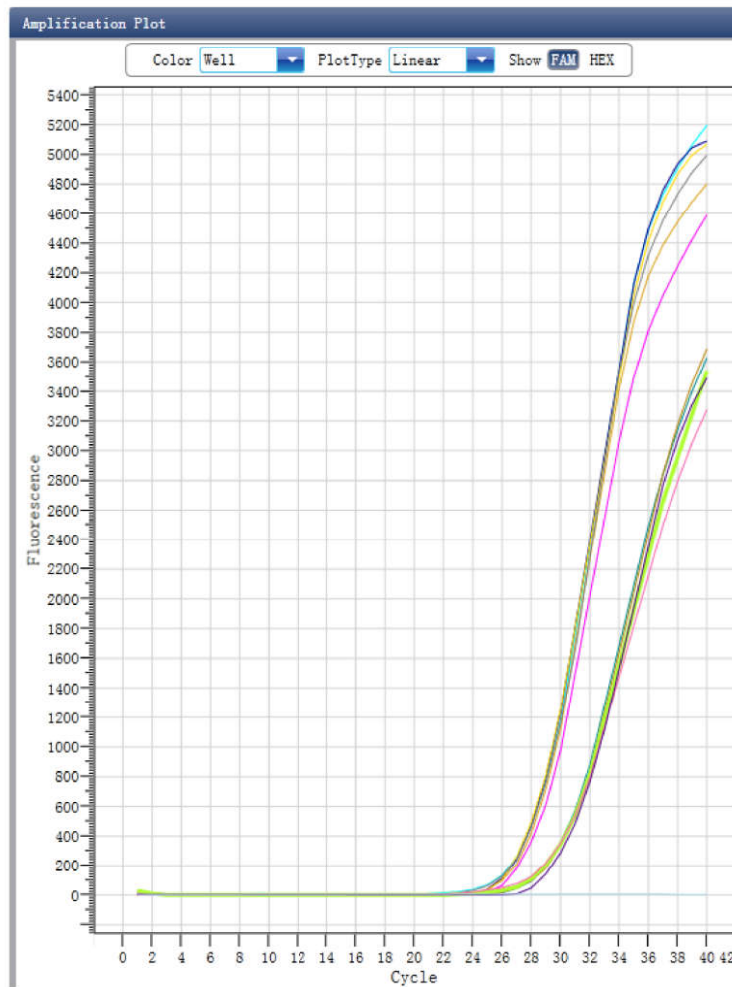
1. Click Analysis ► Amplification Plot



2. Check the amplification curve

- a. Set up colour
- b. Set up plot type
- c. Set up show dye

When the background colour of a dye name is blue, it will be displayed; while white indicates it will not be displayed.



- 3. Check the reaction plate
 - a. Select reaction plate well site and check corresponding well site curve

The default is all wells are selected

 - b. Zoom-In, Zoom-Out and reset the reaction plate
 - c. Check well table

d. Check results summary



4. Set up inspection item

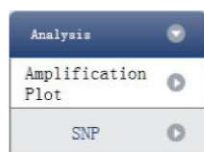
- a. Set up assay
- b. Set up threshold
- c. Set up automatic baseline

When the threshold value is not automatic, the user cannot set up the automatic baseline



6.4.1.2 Check SNP

- 1. Click Analysis ► SNP



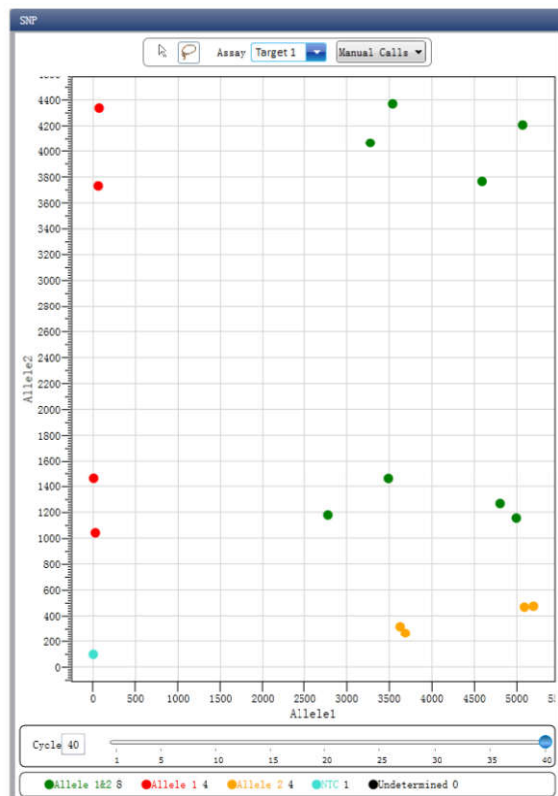
2. Check SNP

a. 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.

b. Set up Assay

c. Set up manual calls



3. Check the reaction plate

a. Select reaction plate well site and check corresponding well site curve

The default is all wells are selected

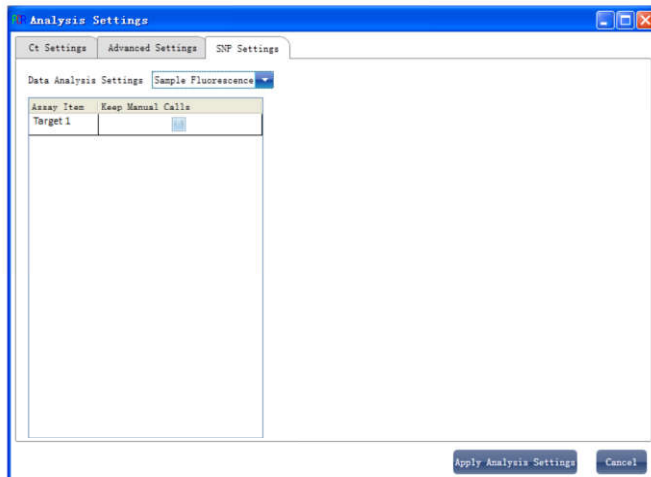
b. Zoom-In, Zoom-Out and reset the reaction plate

c. Check well table information

d. Check results summary

6.4.2 Adjust Parameter Re-analysis

1. Click **Analysis Settings** ► the Analysis Settings dialog box will pop up
 - a. Adjust analysis data
 - b. Adjust whether the inspection item will retain manual recognition genotype



6.5 Experiment Report

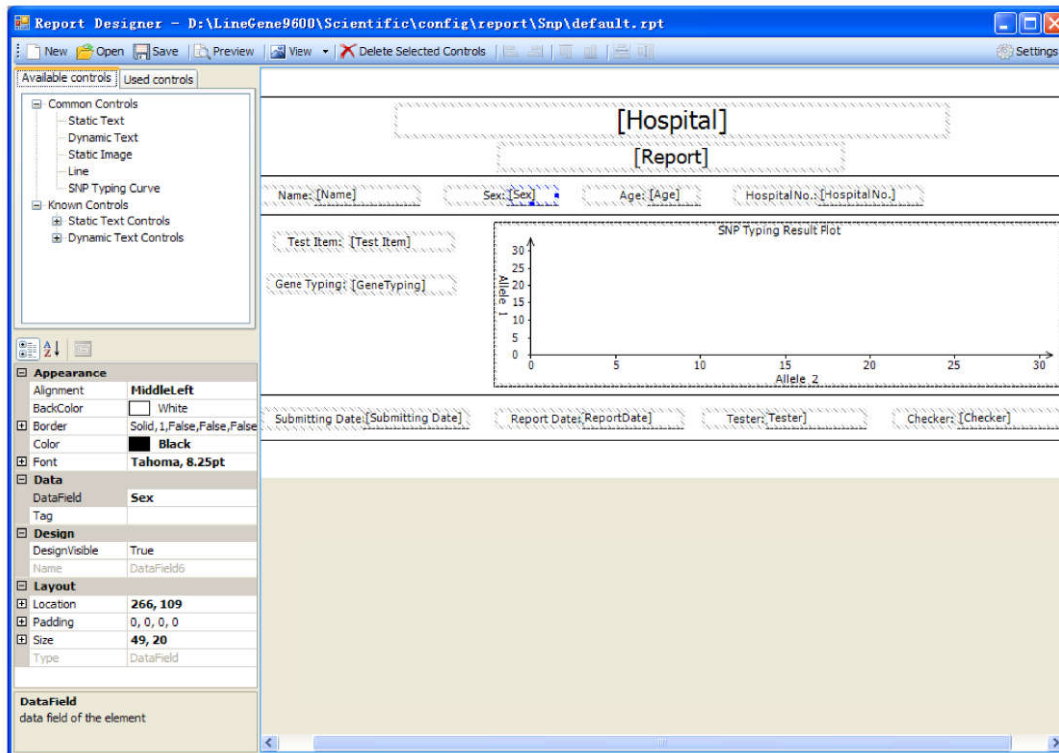
Start
▼
Design Experiment
▼
Prepare for the Reaction
▼
Run the Experiment
▼
Experiment Analysis
▼
Experiment Report
▼
Data Export
▼
End

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

6.5.1 Designing a Report Template

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

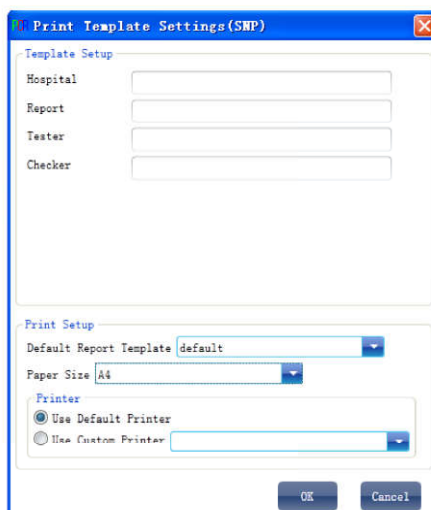
The report consists of controls and the user can add, modify and delete controls. Available controls include Static Text, Dynamic Text, Line, Static Image and SNP Typing Curve.



6.5.2 Print Setting

1. 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.



6.5.3 Comprehensive Report

1. 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..

LineGene9600 Consolidated Report 1 / 11

Experiment Name: 20111125
 Experiment Type: SNP
 File Name: F:\LineGene9600\20111125_SNP.fqd
 Run Time: 2011/11/25 13:42:45 - 2011/11/25 14:41:29
 Gain: F1:6, F2:7

Run Program

Hold Stage

Target	Incubation Time	Rate	Sampling
94	120	4	<input type="checkbox"/>

PCR Stage Cycles:40

Target	Incubation Time	Rate	2nd Temp	Step Size	Step Delay	Grad Temp.	Grad Range	Sampling
95	5	4						<input type="checkbox"/>
60	30	4						<input checked="" type="checkbox"/>

Detectors

Detector	Allele	Dye	Color
项目1	Allele1	FAM	
	Allele2	HEX	

Plot Plate

	1	2	3	4	5	6	7	8	9	10	11	12
A												
B	项目1 - FAM	项目1 - FAM	项目1 - FAM	项目1 - FAM	项目1 - FAM	项目1 - FAM	项目1 - FAM	项目1 - FAM	项目1 - FAM	项目1 - FAM	项目1 - FAM	项目1 - FAM
C												
D	项目1 - FAM	项目1 - FAM	项目1 - FAM	项目1 - FAM	项目1 - FAM	项目1 - FAM	项目1 - FAM	项目1 - FAM	项目1 - FAM	项目1 - FAM	项目1 - FAM	项目1 - FAM
E												

Report Items

- Basic Information
- Run Program
- Detectors
- Plot Plate
- Table Plate
- Samples
- Amp. Curve(Linear)
- Amp. Curve(Log)
- Quan. Analysis Result
- SNP Typing Plot
- SNP Analysis Result

6.5.4 Report Printing

1. Click **Report** ► **Report Print**



2. Report print setting

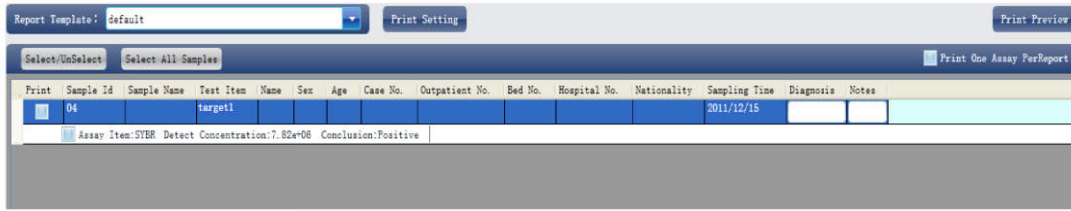
a. Set up report template

b. Print setting (please refer to Section 5.2)

c. Select print items

d. Print preview

e. Print the report

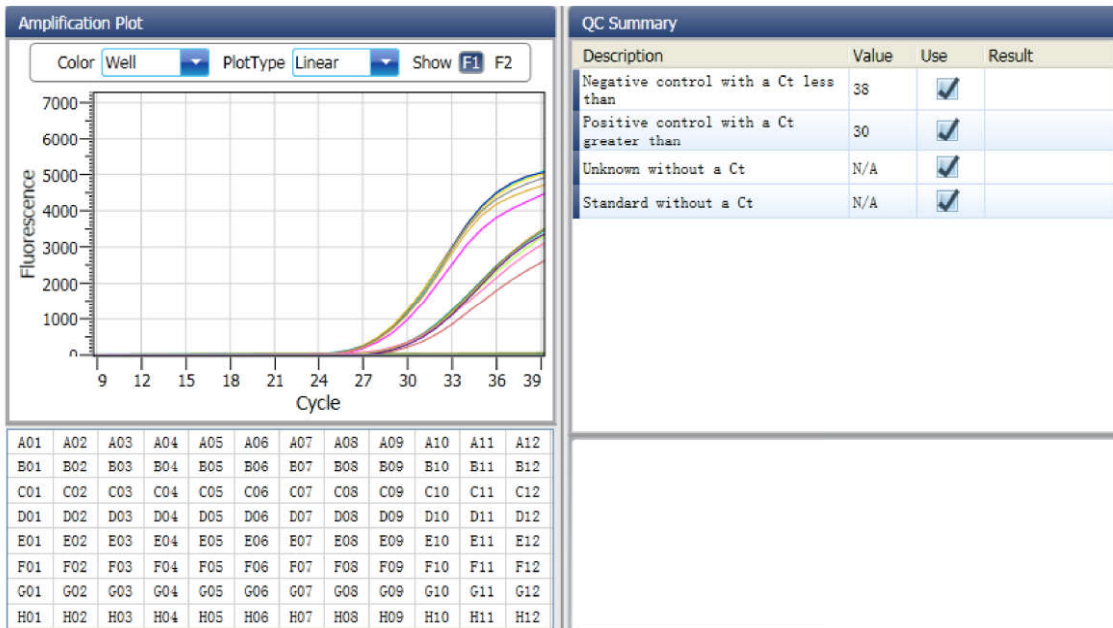


6.5.5 QC Summary

1. Click Report ► QC Summary



2. Check the QC summary



6.6 Data Export

Start
▼
Design Experiment
▼
Prepare for the Reaction
▼
Run the Experiment
▼
Experiment Analysis
▼
Experiment Report
▼
Data Export
▼
End

This section describes how to export data and covers exporting to a database, experiment filing 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 Filing

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



2. Experiment filing

Click **Data Summary** ► **Archived Experiment** ► export the filed experiment file

The suffix of filed experiment file is .fqh

6.6.3 Export Experiment Data to EXCEL

Click **Data Summary** ► **Export Experiment** ► **Export Experiment to Excle** ► 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 High Resolution Melting

7.1 Design Experiment

Start
▼
Design Experiment
▼
Prepare for the Reaction
▼
Run the Experiment
▼
Experiment Analysis
▼
Experiment Report
▼
Data Export
▼
End

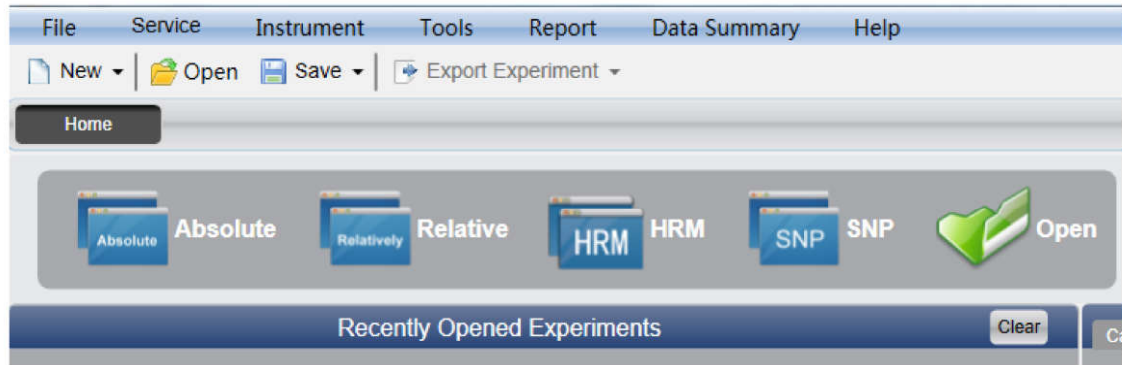
This section describes how to design an SNP experiment and covers creating a new SNP experiment, inspection item setting, sample information setting, reaction plate setting and programme setting.

7.1.1 Create High Resolution Melting Experiment

1. Click **HRM** on **Home** interface and create SNP Experiment window.

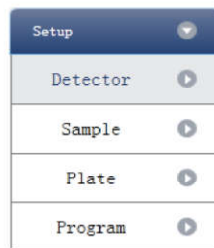
An SNP experiment can be also created by:

- a. Clicking **New ► HRM** on the toolbar
- b. Clicking **File ► New ► HRM** on the menu bar



7.1.2 Detector Setting

1. Click Setup ► Detector



2. Input basic information

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



3. Inspection Item Setting

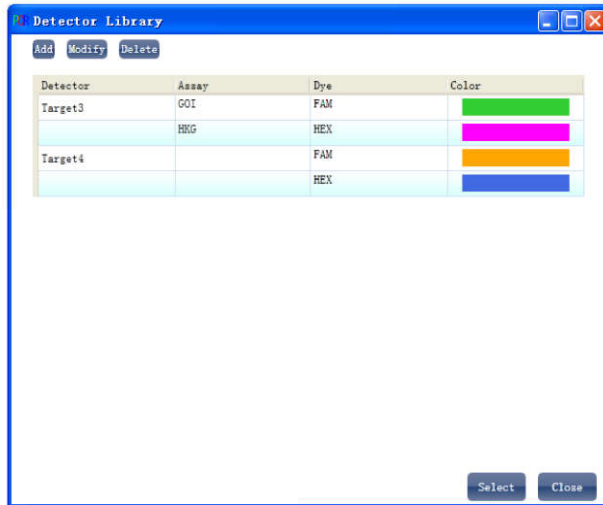
Set up the Detector, Allele, Dye and Colour.

If necessary, the user can also:

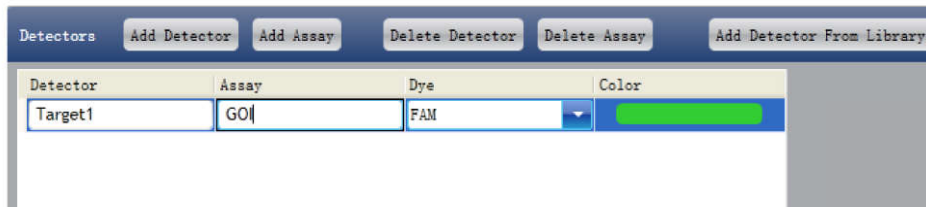
a. Add Detector

b. Delete Detector

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



d. Set up the item name, set up the dye name and set up the colour

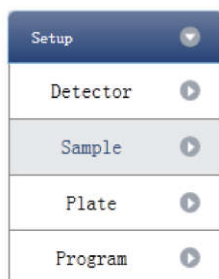


4. Set up reference dye



7.1.3 Sample Information Setting

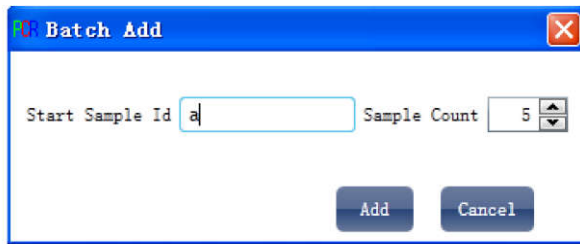
1. Click Setup ► Sample



2. Add sample information

a. Itemized addition: input ID in **Sample ID** ► press **Enter** ► add information for one sample

b. Batch addition: click **Batch Add** ► the Batch Add window will pop up



3. Delete sample information

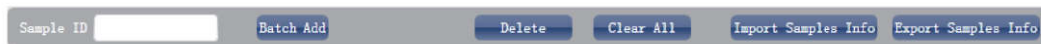
a. Itemized deletion: select one sample ► click **Delete** ► delete the selected sample information

b. Delete all: click **Clear All** ► delete all sample information

4. Import/Export sample information

a. Click **Import Sample Info** ► the File Import window will pop up ► import sample information file in CSV format

b. Click **Export Sample Info** ► the Save As window will pop up ► the sample information will be exported in CSV file format

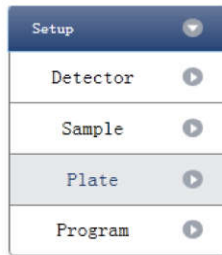


5. Set up sample information

Sample Id	Color	Sample Name	Sampling Time	Submitting Date
a1		Sample1	2013-12-06	2013-12-06
a2		Sample2	2013-12-06	2013-12-06
a3		Sample3	2013-12-06	2013-12-06
a4		Sample4	2013-12-06	2013-12-06
a5		Sample5	2013-12-06	2013-12-06

7.1.4 Reaction Plate Setting

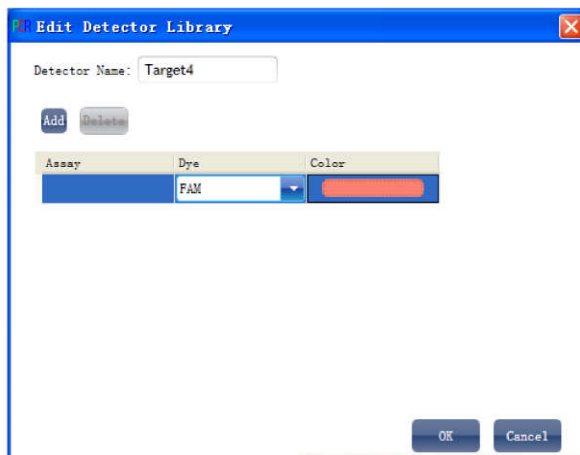
1. Click Setup ► Plate







2. Set up the inspection criteria of the reaction plate

a. 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.



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

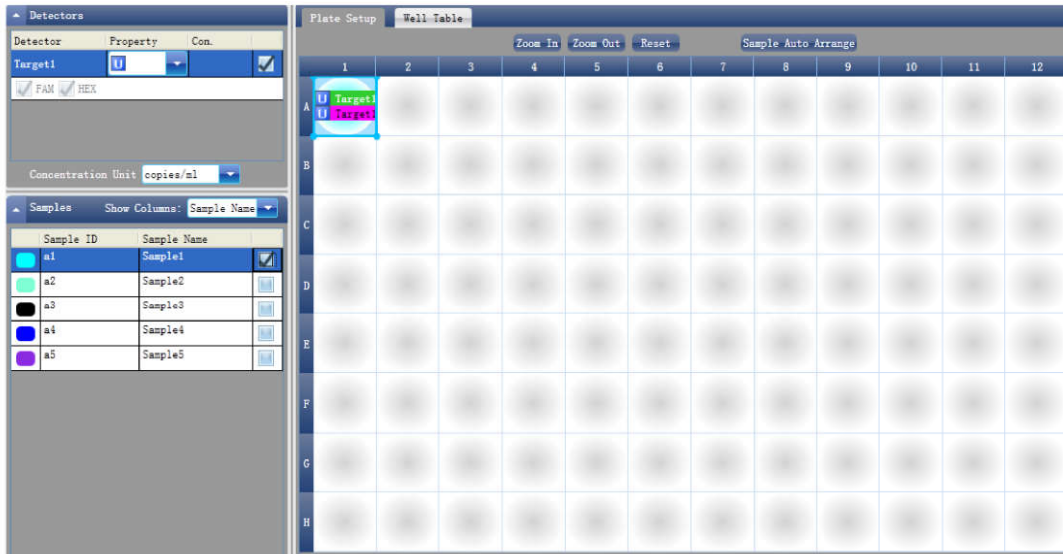
Property	Name	Concentration	Concentration unit
	Unknown	NO	Copies/ml
	Standard	YES	IU/ml
	Negative	NO	Fg/ml
	Positive	NO	Pg/ml

c. Select a sample and the list displayed will change

d. Zoom-In, Zoom-Out and reset the reaction plate.

e. Sample Auto Arrange

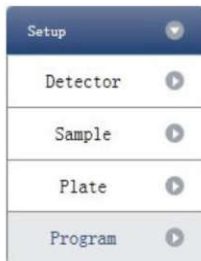
f. Check Well Table



#	Well	Sample Id	Assay Item	Property	Dye
1	A01	a1	Target1	Unknown	FAM
1	A01	a1	Target1	Unknown	HEX
2	A02				
3	A03				
4	A04				
5	A05				
6	A06				
7	A07				
8	A08				

7.1.5 Programme Setting

1. Click Setup ► Programme



2. Run Programme Setup

a. 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**.

b. Create new step: the user can create a new step **Before** or **After** the currently selected step

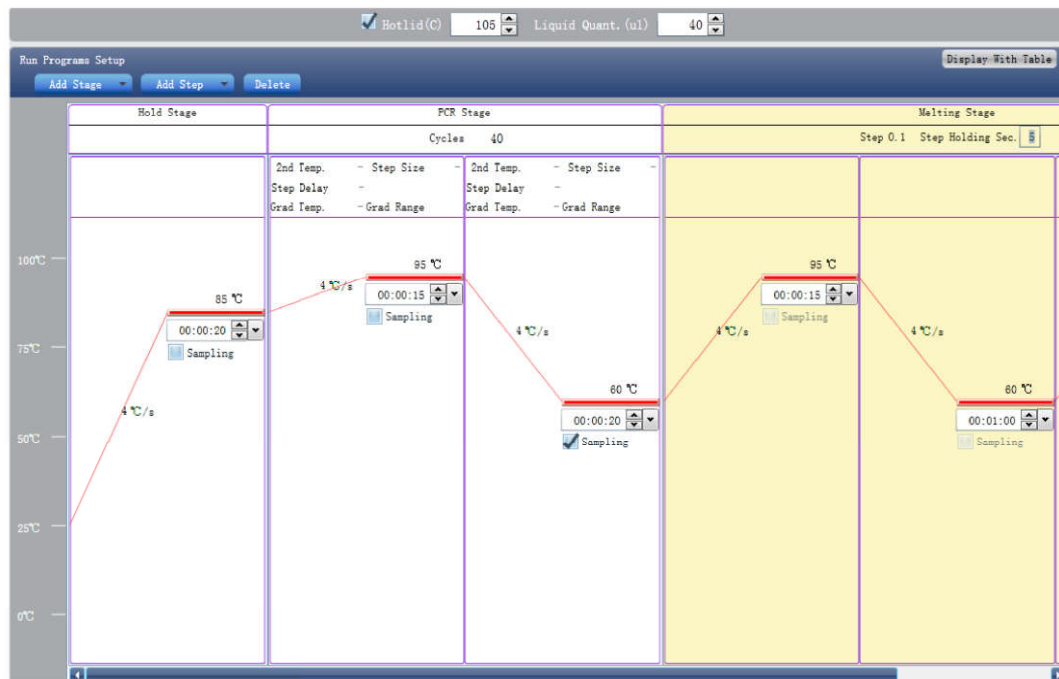
The user can also click **Add Step** and the default will be adding a new Step at the end of the currently selected stage or after the currently selected step.

c. Delete: the user can delete the currently selected step or stage

d. Display form: click **Display With Table** ► new window will pop up ► the details of the current experiment will be displayed in a table.

e. Set up the experimental data of the hold stage, cycling stage and melting stage melting section

f. Set up the hot-lid temperature and liquid volume



7.2 Prepare for Reaction

Start
▼
Design Experiment
▼
Prepare for the Reaction
▼
Run the Experiment
▼
Experiment Analysis
▼
Experiment Report
▼
Data Export
▼
End

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 7.1.4.

7.3 Run the Experiment

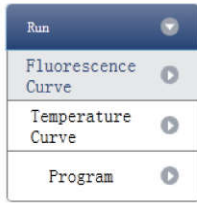
This section describes how to run the experiment after loading the reaction plate and covers the operating of fluorescence curve, the operating of temperature curve and programme setting.

Start
▼
Design Experiment
▼
Prepare for the Reaction
▼
Run the Experiment
▼
Experiment Analysis
▼
Experiment Report
▼
Data Export
▼
End

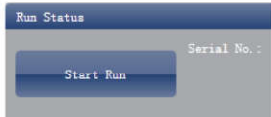
This section describes how to run/operate the experiment after loading the reaction plate and includes how to operate the fluorescence curve, the temperature curve and programming.

7.3.1. Run Fluorescence Curve

1. Click Run ► Fluorescence Curve

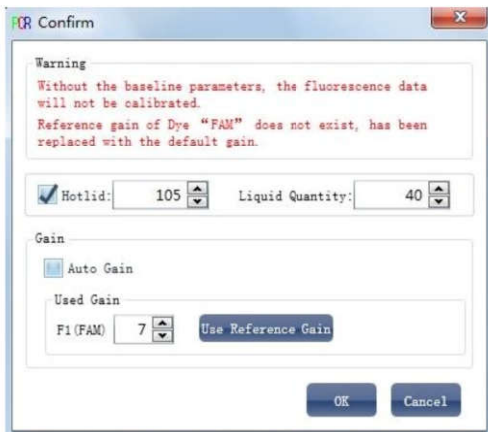


2. Click Start Run



3. Operating confirmation

- a. Modify hot-lid temperature and liquid quantity (sample volume).
- b. Gain (baseline) parameter setting
- c. Target fluorescence value setting



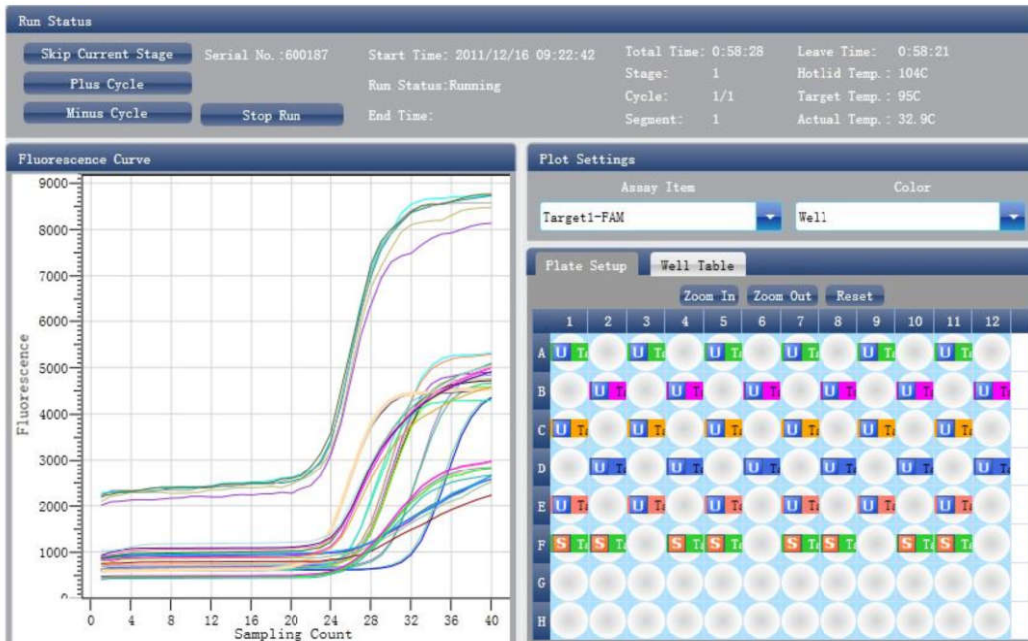
4. After it starts running, the user can:

- a. Skip the current stage
- b. Add a cycle
- c. Delete a cycle
- d. Stop run

5. Plot display setting

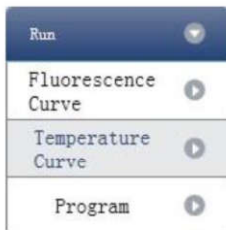
- a. Assay item

b. Plot colour



7.3.2 Run Temperature Curve

1. Click Run ► Temperature Curve



2. Click Start Run

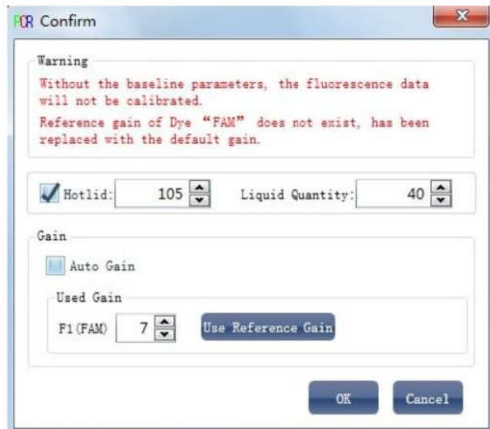


3. Operating confirmation

a. Modify hot-lid temperature and liquid quantity (sample volume).

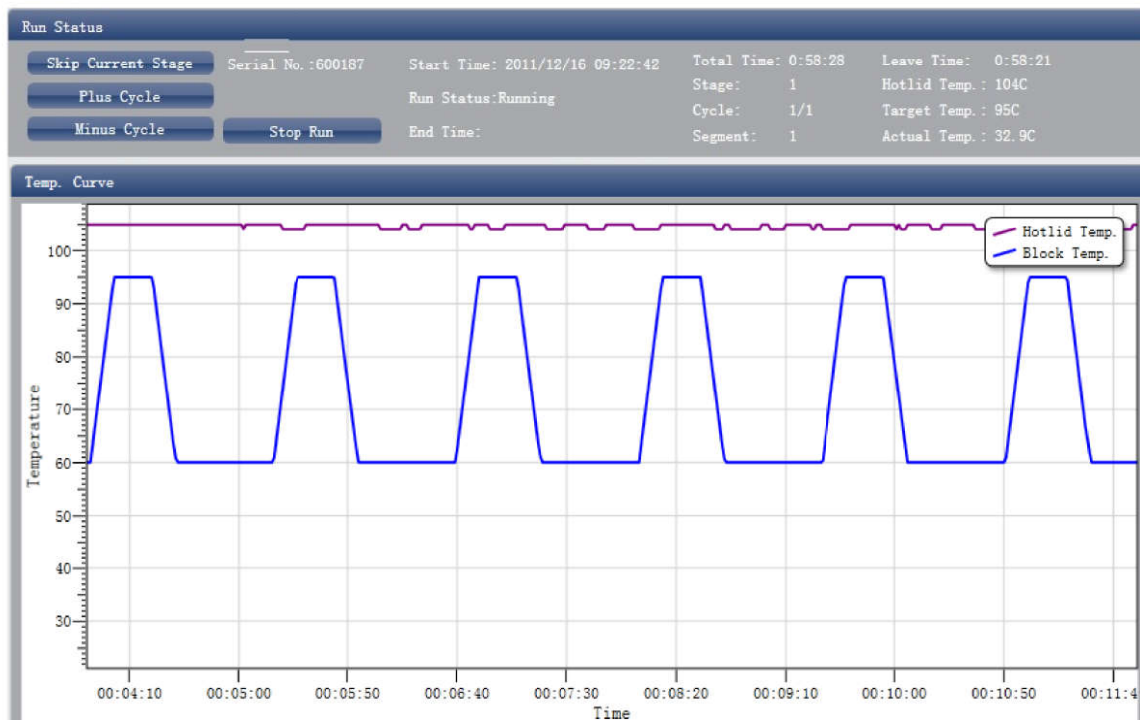
b. Gain (baseline) parameter setting

c. Target fluorescence value setting



4. After it starts running, the user can:

- a. Skip the current stage
- b. Add a cycle
- c. Delete a cycle
- d. Stop run



7.3.3 Programme Setting

The user can only check the programme setting but cannot make modifications.

7.4 Experiment Analysis

Start
▼
Design Experiment
▼
Prepare for the Reaction
▼
Run the Experiment
▼
Experiment Analysis
▼
Experiment Report
▼
Data Export
▼
End

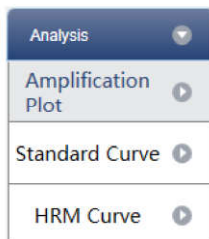
This section describes how to view the experiment analysis results after running an experiment and adjusting parameters for re-analysis.

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

7.4.1 Check Results

7.4.1.1 Check the Amplification Plot

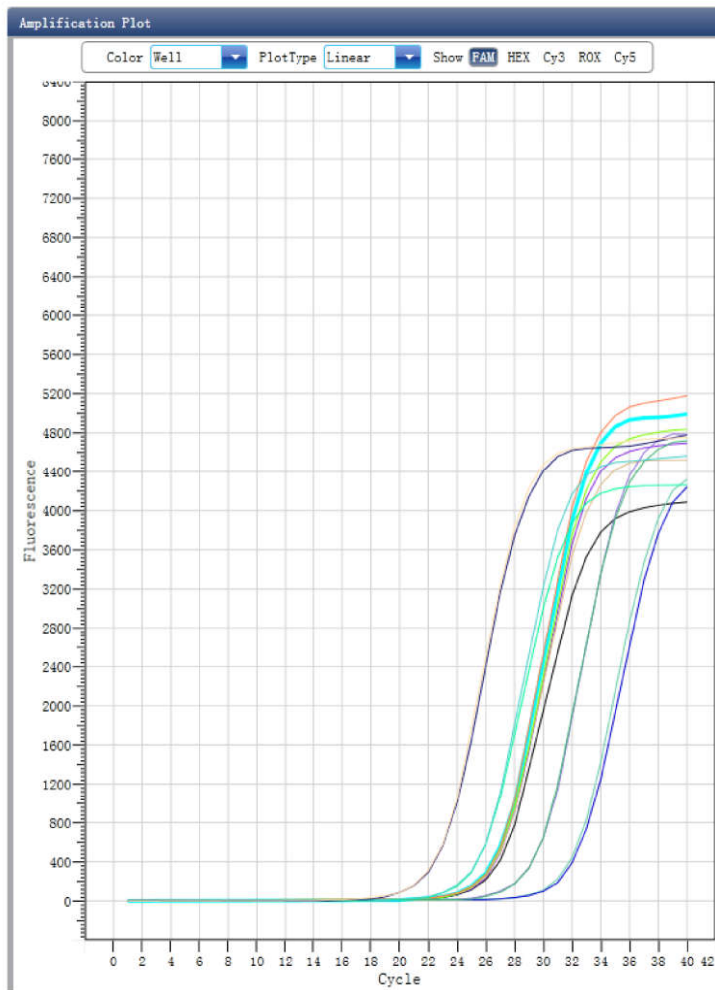
1. Click Analysis ► Amplification Plot



2. Check the amplification curve

- a. Set up colour
- b. Set up plot type
- c. Set up show dye

When the background colour of a dye name is blue, it will be displayed; while white indicates it will not be displayed.



3. Check the reaction plate

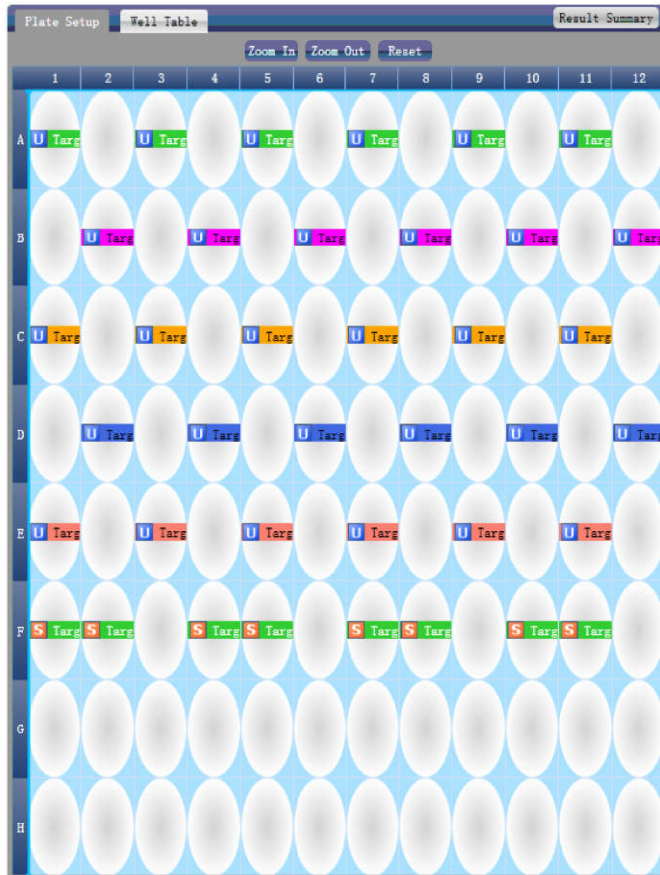
- a. Select reaction plate well site and check corresponding well site curve

The default is all wells are selected

- b. Zoom-In, Zoom-Out and reset the reaction plate

c. Check well table

d. Check results summary



4. Set up inspection item

a. Set up assay

b. Set up threshold

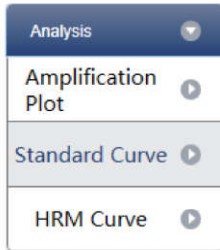
c. Set up automatic baseline

When the threshold value is not automatic, the user cannot set up the automatic baseline



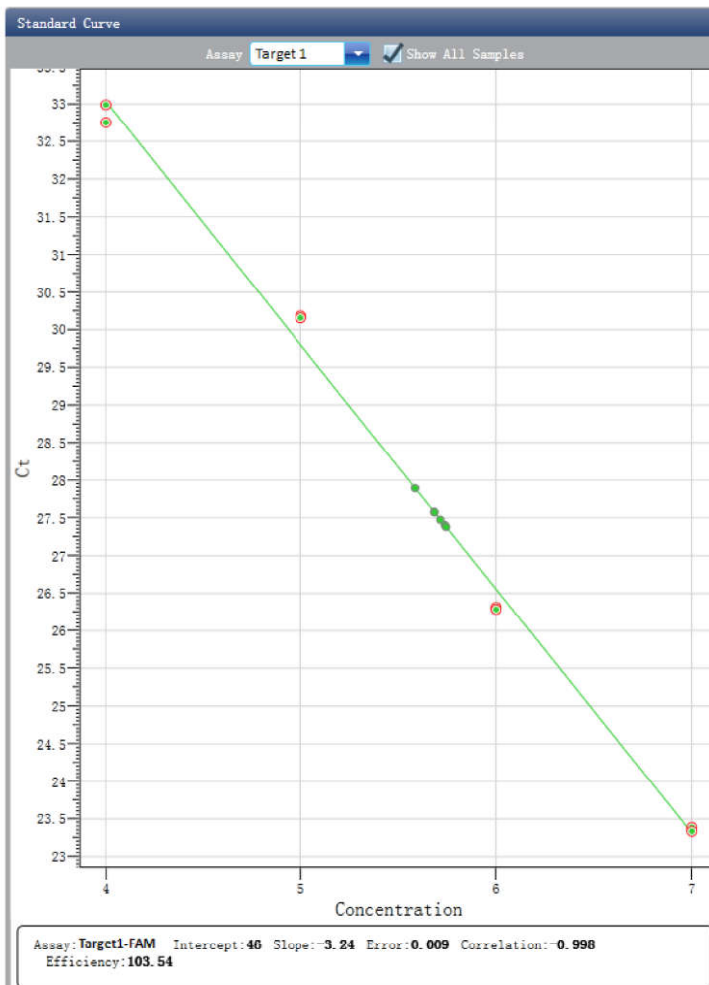
7.4.1.2 Check the Standard Curve

1. Click Analysis ► Standard Curve



2. Check the Standard Curve

a. Set up array



3. Check the reaction plate

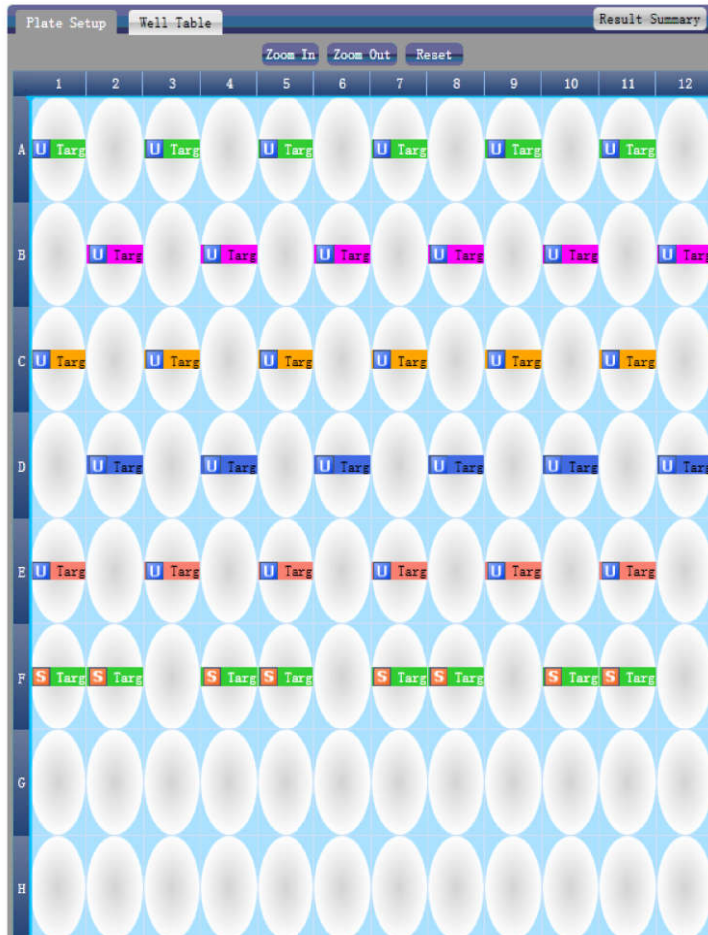
a. Select reaction plate well site and check corresponding well site curve

The default is all wells are selected

b. Zoom-In, Zoom-Out and reset the reaction plate

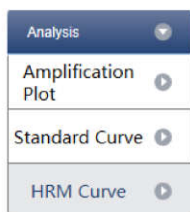
c. Check well table

d. Check results summary



7.4.1.3 Check HRM

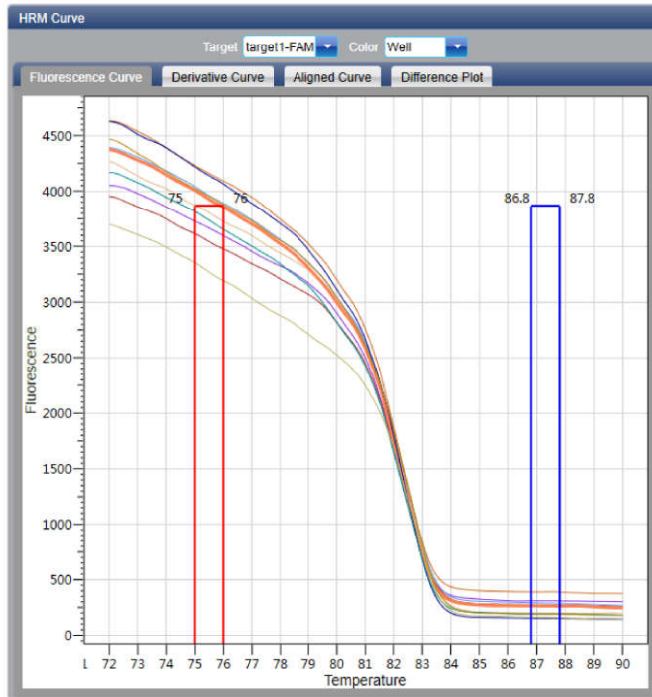
1. Click Analysis ► HRM Curve



2. Check the fluorescence curve

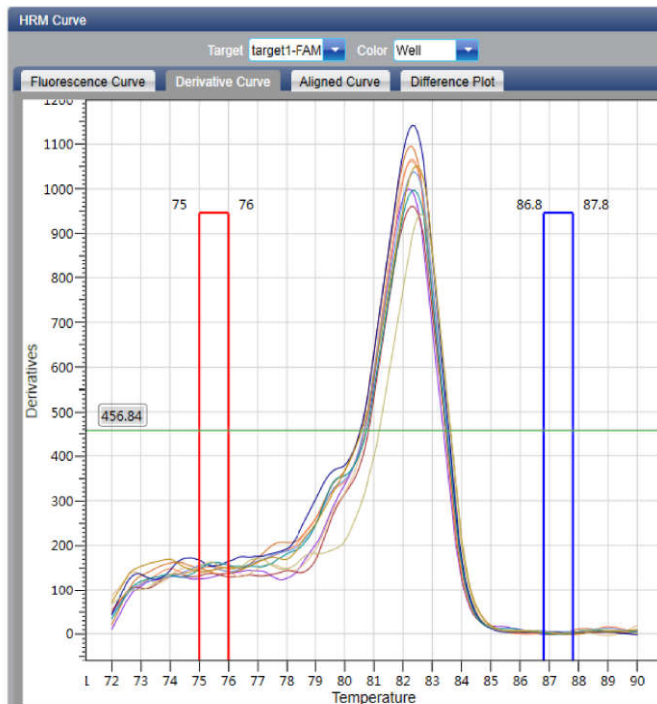
a. Set up target

b. Set up color



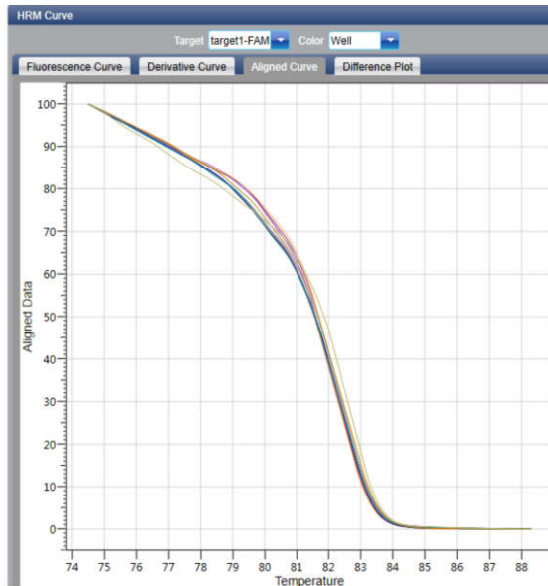
3. Check the derivative curve

- a. Set up target
- b. Set up color



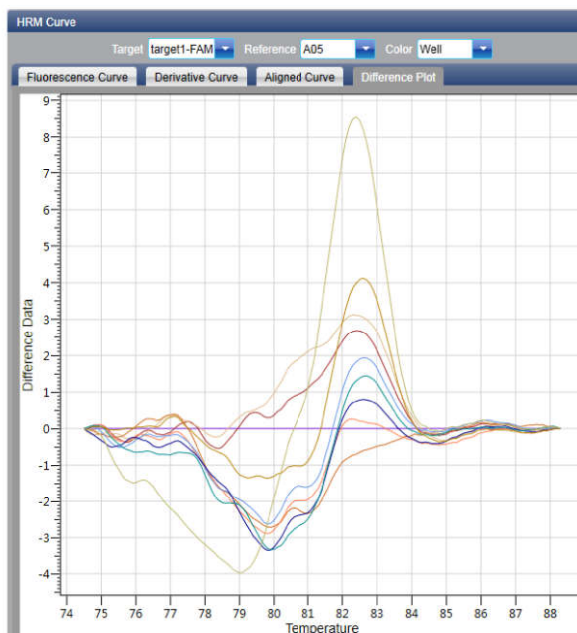
4. Check the aligned curve

- a. Set up target
- b. Set up color



5. Check the Different Pilot

- a. Set up target
- b. Set up color



6. Check the reaction plate

- a. Select reaction plate well site and check corresponding well site curve

The default is all wells are selected

- b. Zoom-In, Zoom-Out and reset the reaction plate

- c. Check well table

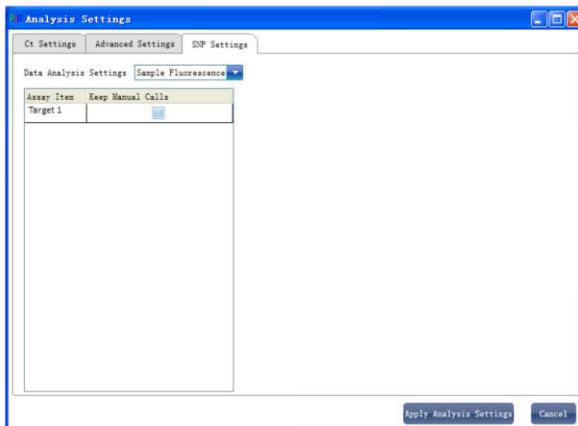


7.4.2 Adjust Parameter Re-analysis

- 1. Click **Analysis Settings** ► the Analysis Settings dialog box will pop up

- a. Adjust analysis data

- b. Adjust whether the inspection item will retain manual recognition genotype



7.5 Experiment Report

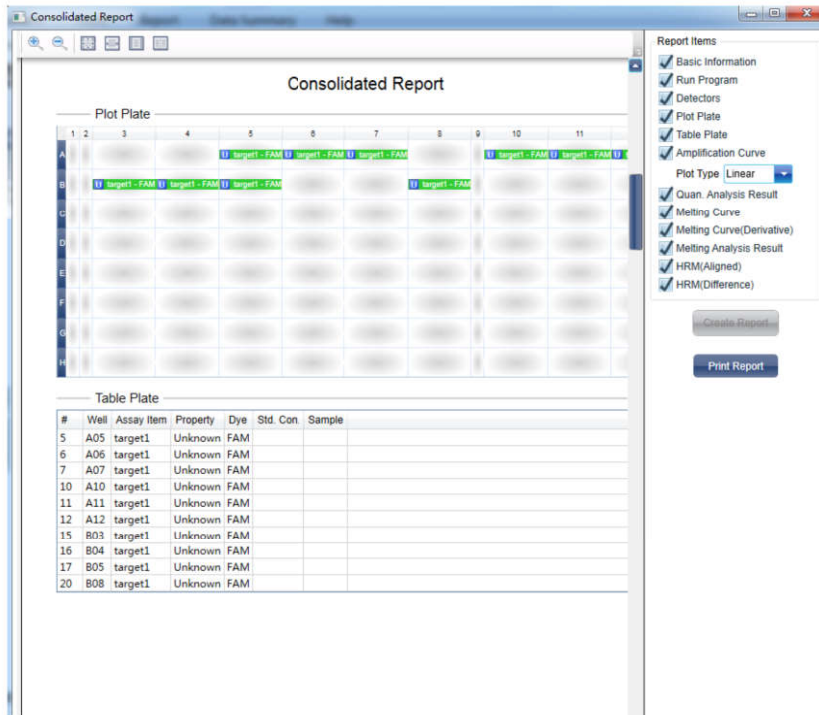
Start
▼
Design Experiment
▼
Prepare for the Reaction
▼
Run the Experiment
▼
Experiment Analysis
▼
Experiment Report
▼
Data Export
▼
End

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

7.5.1 Comprehensive Report

1. 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..

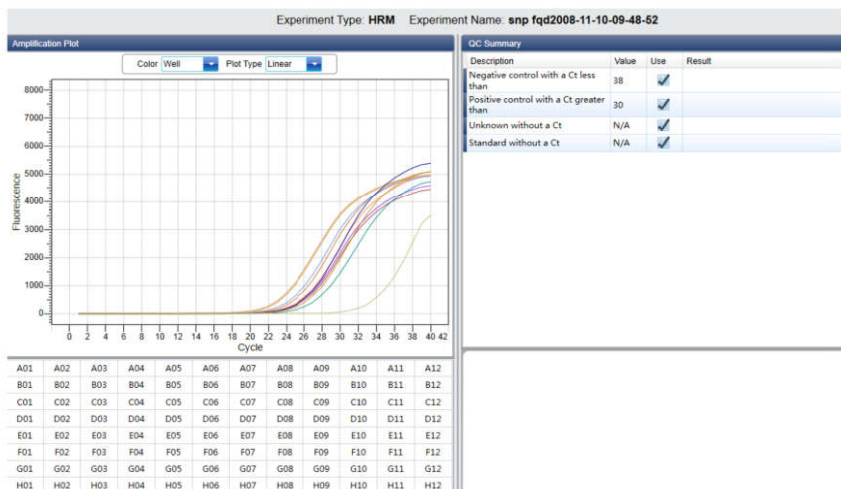


7.5.2 QC Summary

1. Click Report ► QC Summary



2. Check the QC summary



7.6 Data Export

Start
▼
Design Experiment
▼
Prepare for the Reaction
▼
Run the Experiment
▼
Experiment Analysis
▼
Experiment Report
▼
Data Export
▼
End

This section describes how to export data and covers exporting to a database, experiment filing 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 Filing

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



2. Experiment filing

Click **Data Summary** ► **Archived Experiment** ► export the filed experiment file

The suffix of filed experiment file is .fqh

7.6.3 Export Experiment Data to EXCEL

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

7.6.4 Export Experiment Data to TEXT

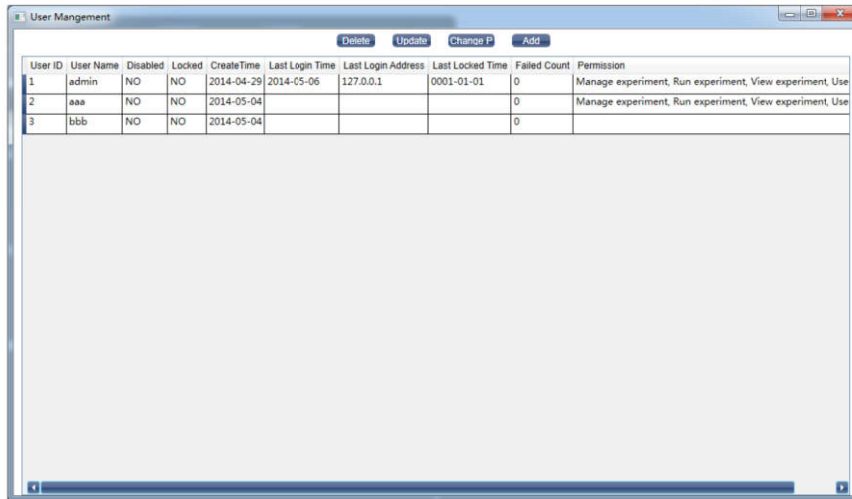
Click **Data Summary** ► **Export Experiment** ► **Export Experiment to Text** ► the exported experiment data will generate TEXT file.

Chapter 8 Service

8.1 User Management

User management is used to manage user information

Click Service ► User Management on the menu bar

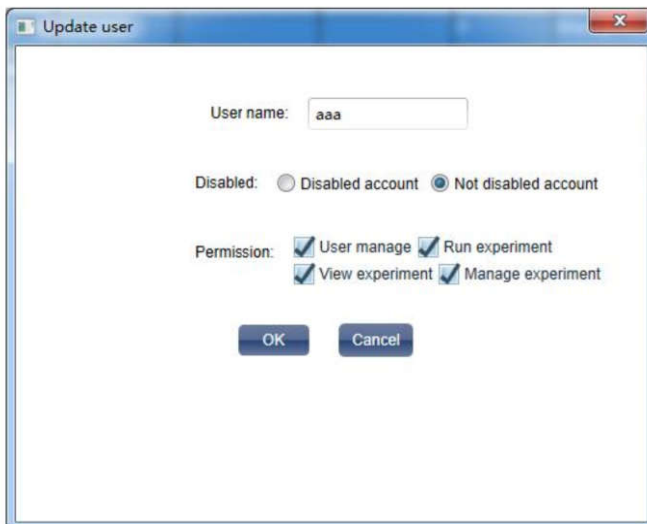


The screenshot shows a window titled "User Management" with a table of users. The table has columns for User ID, User Name, Disabled, Locked, CreateTime, Last Login Time, Last Login Address, Last Locked Time, Failed Count, and Permission. There are three rows of data.

User ID	User Name	Disabled	Locked	CreateTime	Last Login Time	Last Login Address	Last Locked Time	Failed Count	Permission
1	admin	NO	NO	2014-04-29	2014-05-06	127.0.0.1	0001-01-01	0	Manage experiment, Run experiment, View experiment, Use
2	aaa	NO	NO	2014-05-04				0	Manage experiment, Run experiment, View experiment, Use
3	bbb	NO	NO	2014-05-04				0	

The user can:

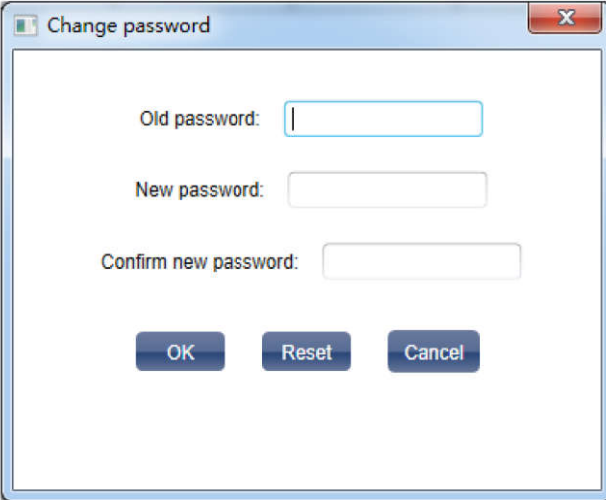
- a. delete user
- b. update user



The screenshot shows a dialog box titled "Update user" with the following fields and options:

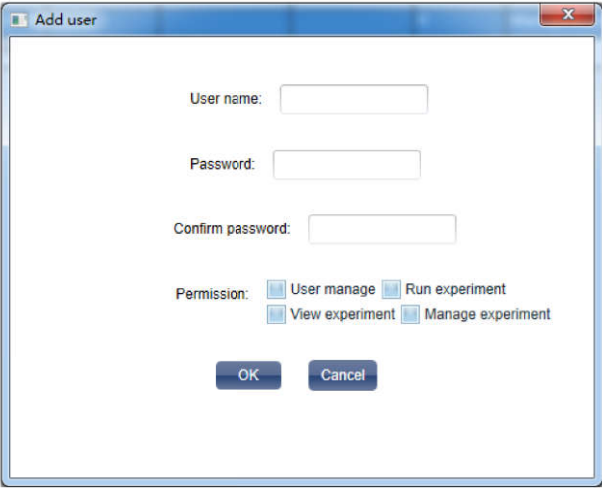
- User name:
- Disabled: Disabled account Not disabled account
- Permission: User manage Run experiment
 View experiment Manage experiment
- Buttons: OK, Cancel

c. change password



A dialog box titled "Change password" with a close button (X) in the top right corner. It contains three text input fields: "Old password:", "New password:", and "Confirm new password:". Below the fields are three buttons: "OK", "Reset", and "Cancel".

d. add user



A dialog box titled "Add user" with a close button (X) in the top right corner. It contains three text input fields: "User name:", "Password:", and "Confirm password:". Below the fields is a "Permission:" section with four checkboxes: "User manage", "Run experiment", "View experiment", and "Manage experiment". At the bottom are two buttons: "OK" and "Cancel".

8.2 Experiment Management

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

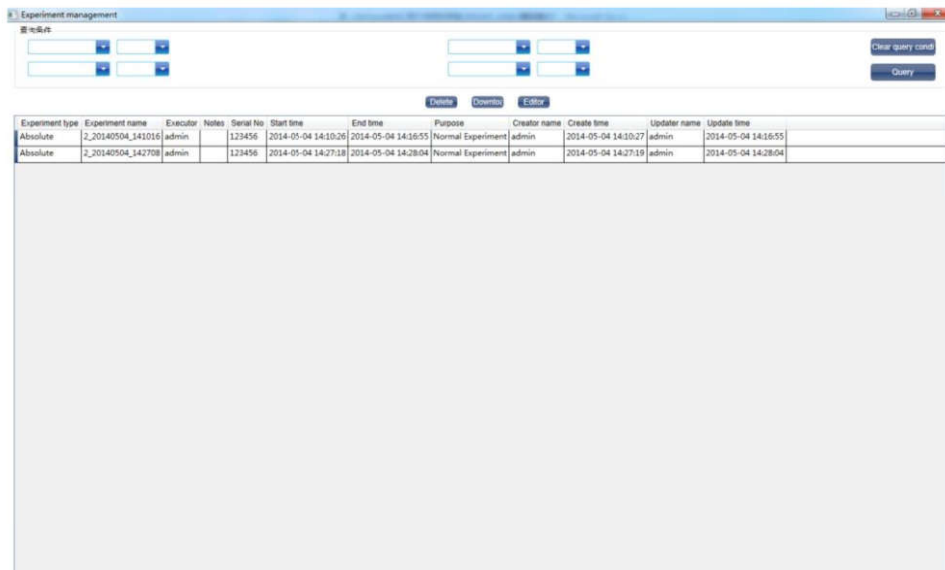
8.2.1 Experiment Management

Click Service ► Experiment management ► Experiment management on the menu bar

the user can:

a. clear query condition

- b. set query condition
- c. query
- d. delete experiment
- e. download experiment
- f. edit experiment

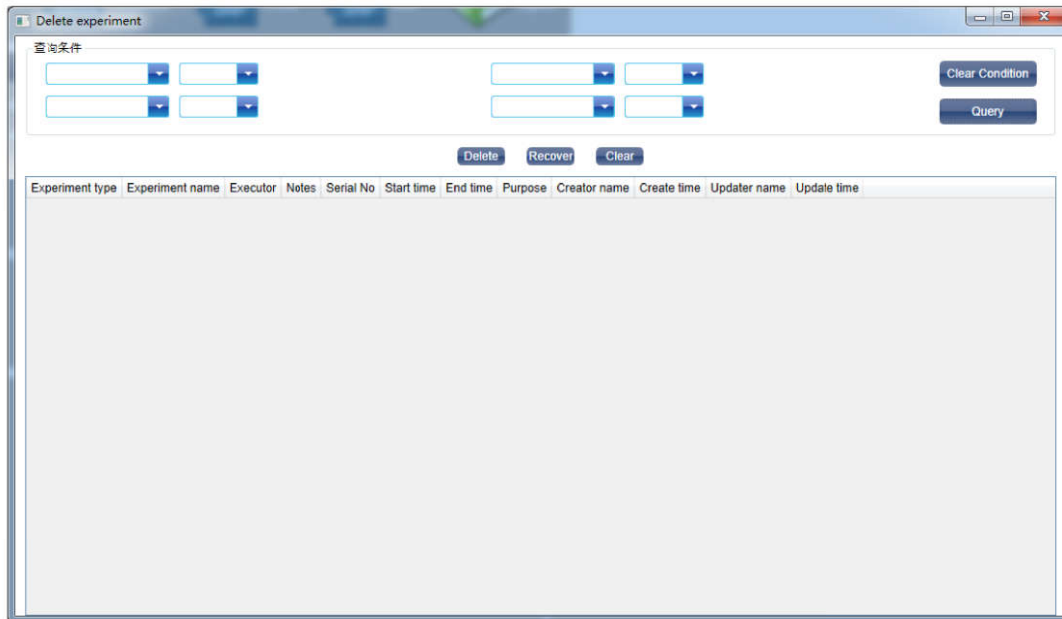


8.2.2 Deleted Experiment Management

Click Service►Experiment Management►Deleted Experiment Management on the menu bar

The user can:

- a. clear query condition
- b. set query condition
- c. query
- d. delete experiment
- e. recover experiment
- f. clear experiment



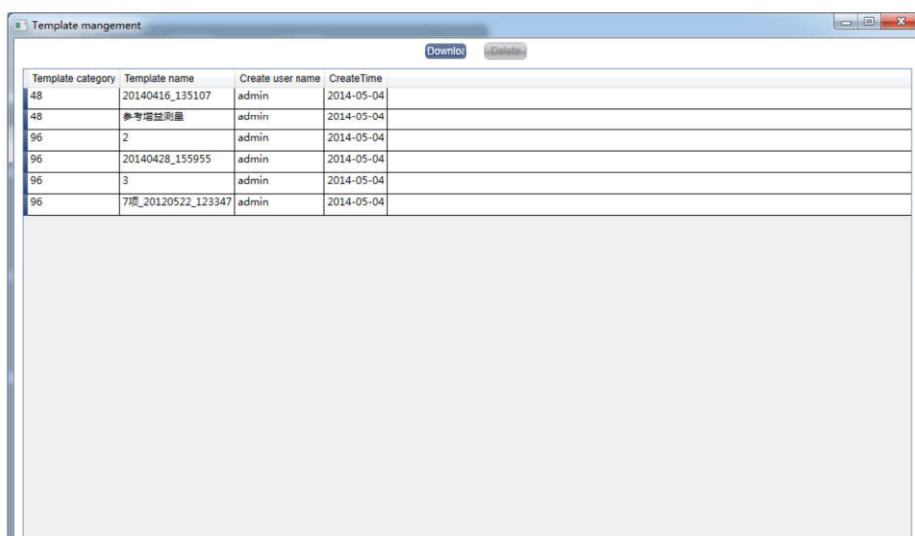
8.3 Template Management

Template Management is used to manage template information.

Click Service ► Template Management on the menu bar

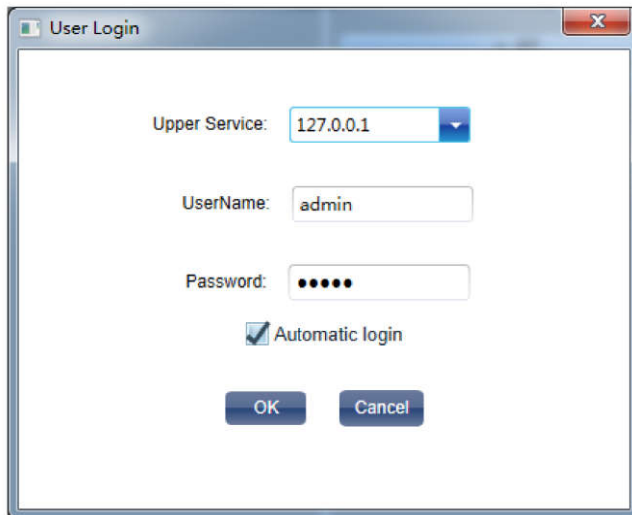
The user can:

- a. download template
- b. delete template



8.4 User Login

Click **Service ► User Login** on the menu bar

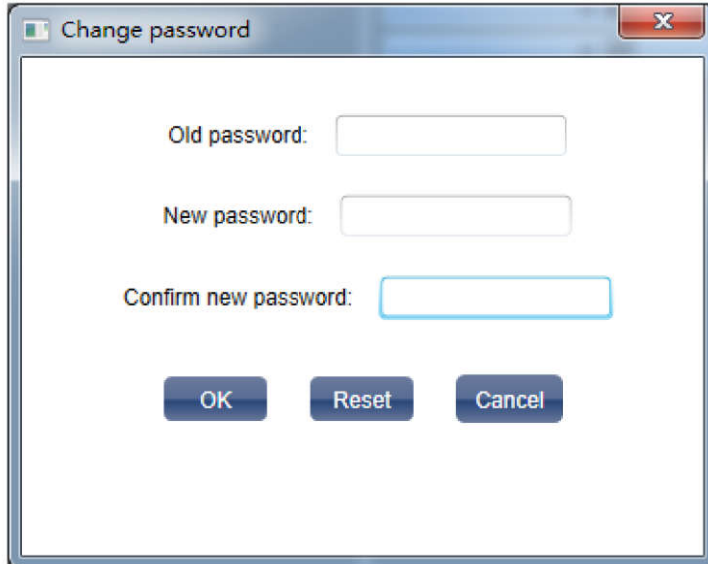


The 'User Login' dialog box contains the following fields and controls:

- Upper Service: 127.0.0.1 (dropdown menu)
- UserName: admin (text input)
- Password: [masked with dots] (password input)
- Automatic login (checkbox)
- OK (button)
- Cancel (button)

8.5 Change Password

Click **Service ► Change Password** on the menu bar



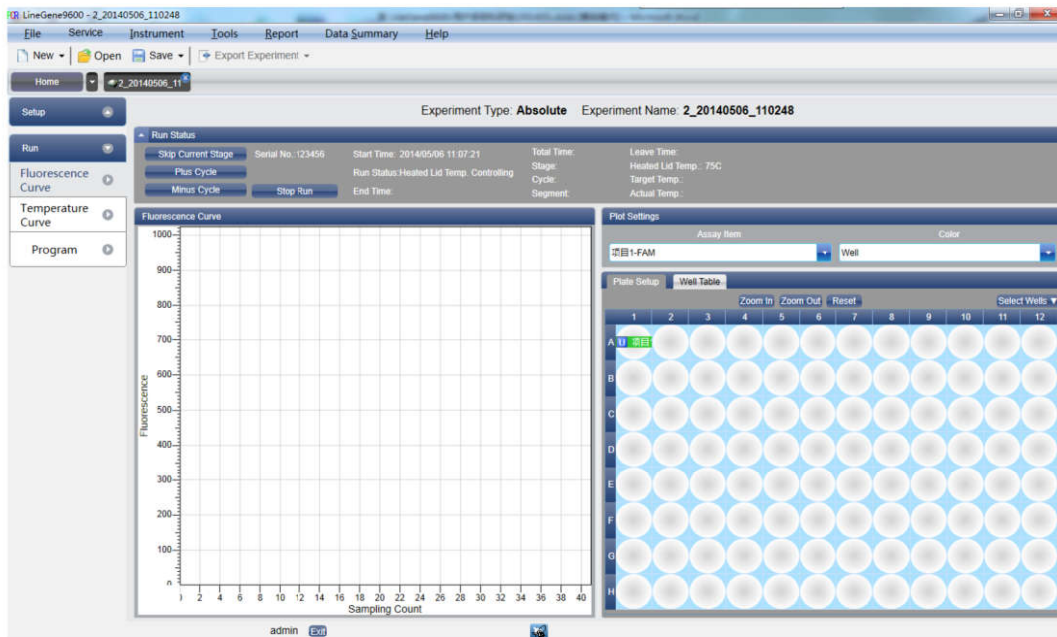
The 'Change password' dialog box contains the following fields and controls:

- Old password: [text input]
- New password: [text input]
- Confirm new password: [text input]
- OK (button)
- Reset (button)
- Cancel (button)

8.6 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 9 Tool Usage

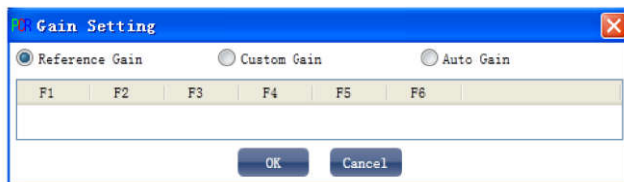
9.1 Gain Setting

The **Gain Setting** tool is used to set up gain modes.

Click **Tools** ► **Gain Setting** ► the following window will pop up

Gain setting can be set up as: reference gain, custom gain and auto gain

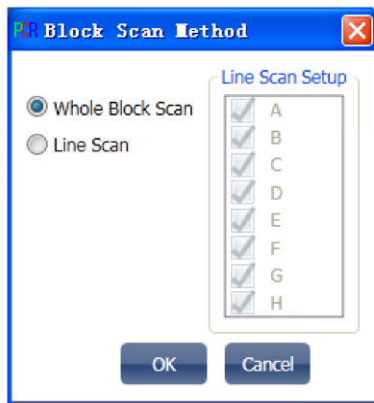
In **Custom Gain** mode, the user can modify the gain value.



9.2 Block Scan Method

Click **Tools** ► **Block Scan Method** ► the following window will pop up.

The user can select Whole Block Scan or Line Scan.



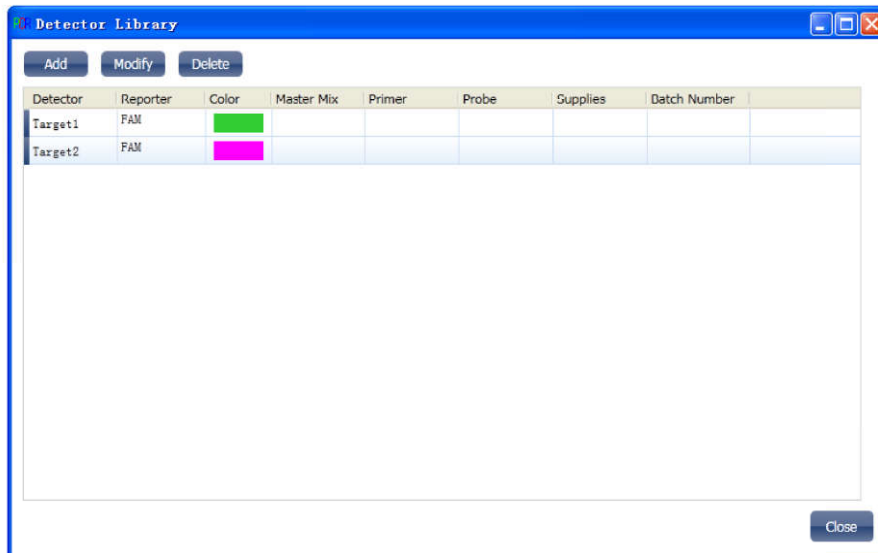
9.3 Detector Library

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:

- a. Add Detector
- b. Modify Detector
- c. Delete Detector



9.4 Customized Dyes

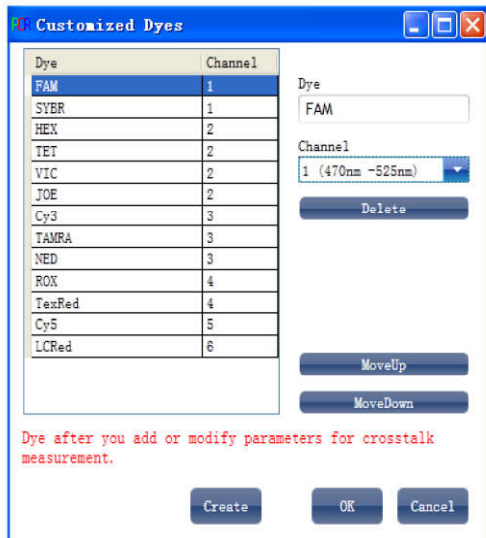
The **Customized Dyes** tool is used to set up existing dyes and newly added dyes.

Click **Tools** ► **Customize Dyes** ► open the following window

The user can:

- a. Create dye
- b. Modify dye name and channel
- c. Delete dye
- d. Move dye upward
- e. Move dye downward

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



9.5 Customize Columns

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

The user can:

- Add columns
- Delete columns
- Modify column name

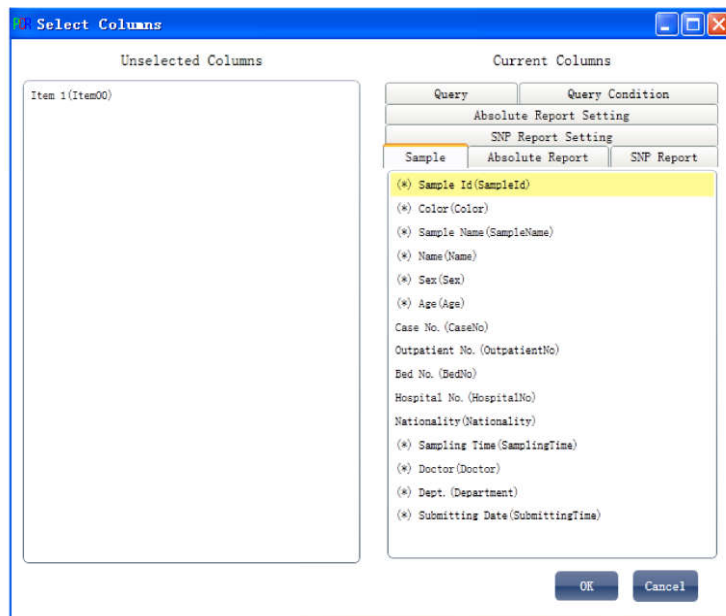


9.6 Column Selection

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

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



9.7 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.

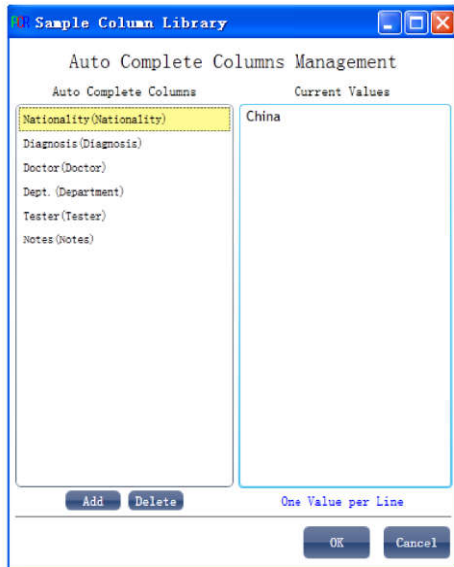
Click **Tools ► Sample Column Library ►** the following window will pop up

The user can:

- a. Add columns

b. Delete columns

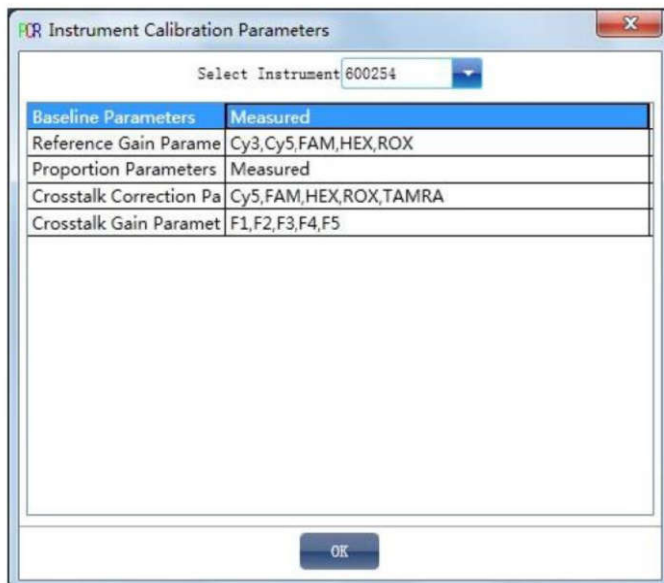
c. Edit the columns content



9.8 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



9.9 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.

The screenshot shows the 'Measure Crosstalk Calibration Parameters' tool interface. At the top, it displays 'Experiment Type: Absolute' and 'Experiment Name: Crosstalk Parameter Measurement'. Below this is the 'Experiment Properties' section with fields for 'Experiment Name: Crosstalk Parameter Measurement', 'User Name:', and 'Comment:'. The 'Detectors' section contains buttons for 'Add Detector', 'Add Assay', 'Delete Detector', 'Delete Assay', and 'Add Detector From Library'. A table lists two detectors: F1 (FAM, Green) and F2 (HEX, Magenta). The 'Reference Dye' section at the bottom has a dropdown menu.

Detector	Reporter	Color	Master Mix	Primer	Probe	Supplies	Batch Number
F1	FAM	Green					
F2	HEX	Magenta					

9.10 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.

Experiment Type: **Absolute** Experiment Name: **Crosstalk Gain Measurement**

Experiment Properties

Experiment Name: Comment:

User Name:

Detectors

Detector	Reporter	Color	Master Mix	Primer	Probe	Supplies	Batch Number
F1	FAM						
F2	HEX						

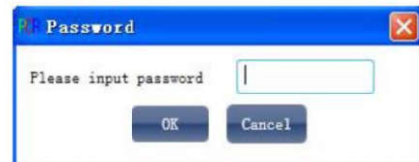
Reference Dye

9.11 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
- Firmware Upgrades



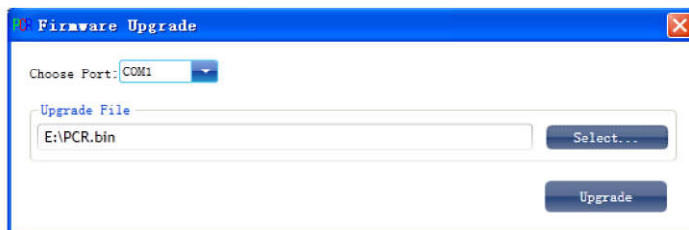
Firmware Upgrade tools are used to upgrade the firmware.

Software updates are achieved by connecting to the computer with the RS232 interface supplied with the instrument.

- Set the MODE update switch of the communication box on the back of the instrument to the right hand side ► Update.
- Switch the power on and connect the serial port line.
- The instrument is in update status.
- In the panel, indicator light flashes green and red at the same time, which is normal.
- Click **Tools ► System Maintenance ► Firmware Upgrade ►** the following window will pop up.

The user can:

- a. Select serial ports
- b. Select the BIN file to be upgraded
- c. Upgrade



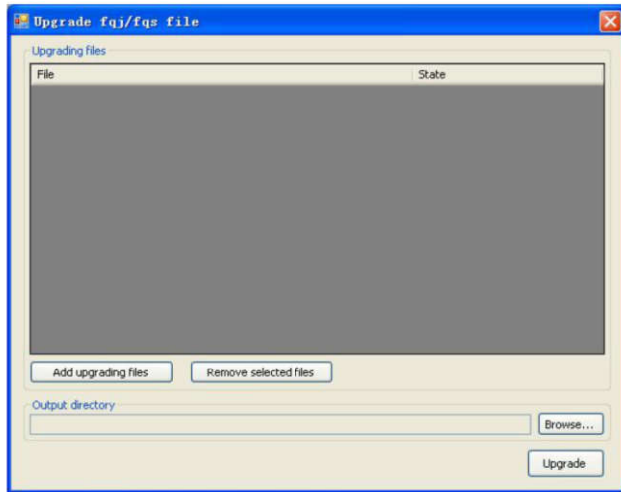
9.12 Upgrade Experiment File Format

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:

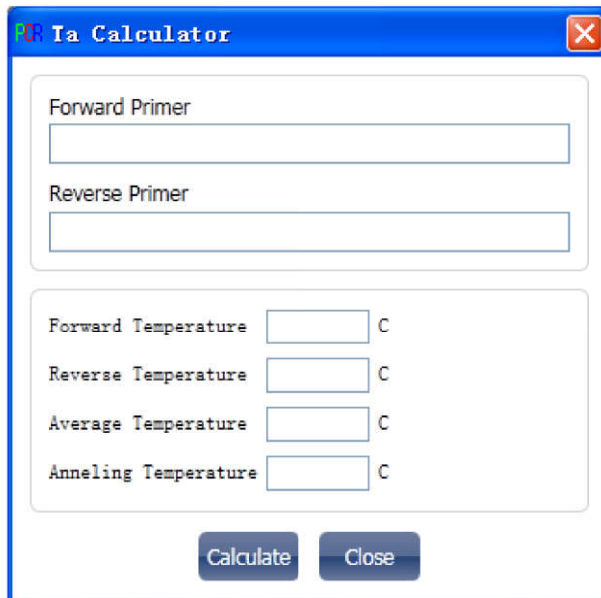
- a. Add files to be upgraded
- b. Remove selected files
- c. Select the output directory of new files
- d. Upgrade



9.13 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 Anneling Temperature.



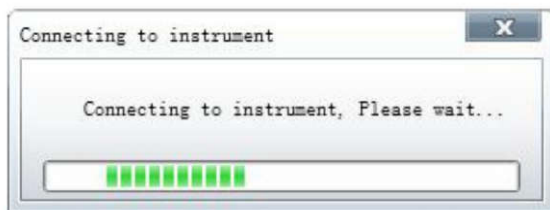
Chapter 10 Other Functions



10.1 Instrument Operation

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

10.1.1 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 .

10.1.2 Disconnect

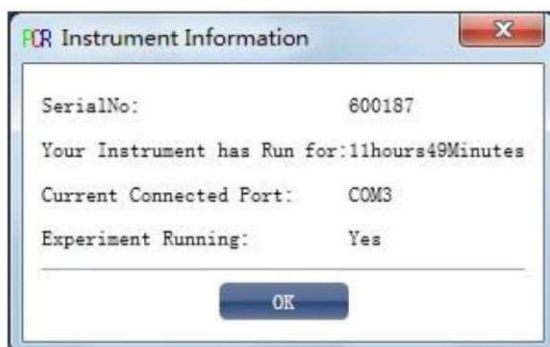
Click **Instrument** ► **Disconnect** ► disconnect currently connected instrument

10.1.3 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.



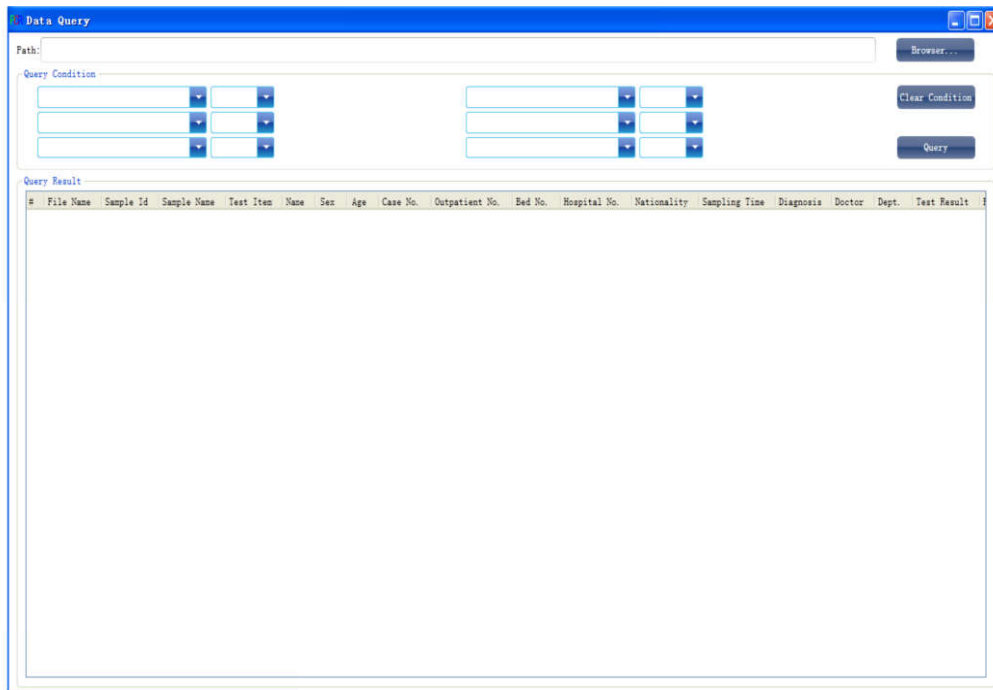
10.2 Data Query

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:

- a. Select database files
- b. Set up query condition
- c. Query
- d. Clear all query conditions



10.3 System Help

Click **Help** ► **Help Topics**

Chapter 11 Maintenance

11.1 Regular cleaning

To ensure normal operation, detection and use, the instrument needs to be cleaned regularly.

- To clean the outer surface: Clean only with a soft cloth, and if necessary, the cloth may be soaked with alcohol, distilled water or a mild detergent.
- To clean the module wells: Wells may be cleaned with nail wipes which does not bring dust and if necessary, they may be soaked with 95 percent of absolute ethyl alcohol used in medicine or distilled water.

Warning!

1. Before cleaning this instrument, the power supply must be switched off.
2. When cleaning the conical wells of the module, care must be taken to prevent any cleaning agents from dropping into the wells.
3. The surface of this instrument **MUST NOT** be cleaned with corrosive cleaning agents.
4. To avoid scratches or damage to the optics in the wells, **NEVER** use sharp or hard objects to clean the wells.

11.2 Analysis and Troubleshooting

No.	Problem	Possible Cause	Correction
1	The power switch at the rear of the instrument is set ON, but the instrument makes no response.	The run switch at the front of the instrument is not switched on. The internal switching power will have no voltage output.	For working the instrument, its run switch must be pressed and the green indicator lamp should be lit green to indicate energizing of the control system.
2	The display of system	The system parameters are	The function is not

	parameters menu requires input of “Password”.	for instrument manufacturer’s internal calibration and require special accession password.	required for the end user and for calibration contact the manufacturer or supplier’s service personnel.
3	After turning the power switch on, the power lamp fails to light up.	The run switch is not pressed	This switch is used for temporary turning on/off of the output power and is equivalent to “standby” mode. For prolonged shutdown, the rear power switch should be switched “Off”.
		Power is not switched on.	Check and switch on power
		Burnt fuse	Replace fuse (250V 8A Φ 5x20)
		Damaged switch	Replace switch
		Other	Contact the supplier or manufacturer
4	At detecting sample position, the step motor fails to work and the communication fails.	Poor contact or damage of the interface wire	Check, connect or replace interface wire
		The power switch is not turned on or is turned on only after the programme starts running	Turn on the power switch and restart the programme
		The step motor or the drive is damaged	Contact the supplier or manufacturer
		The fixing clamp is not fully	Tighten it into the

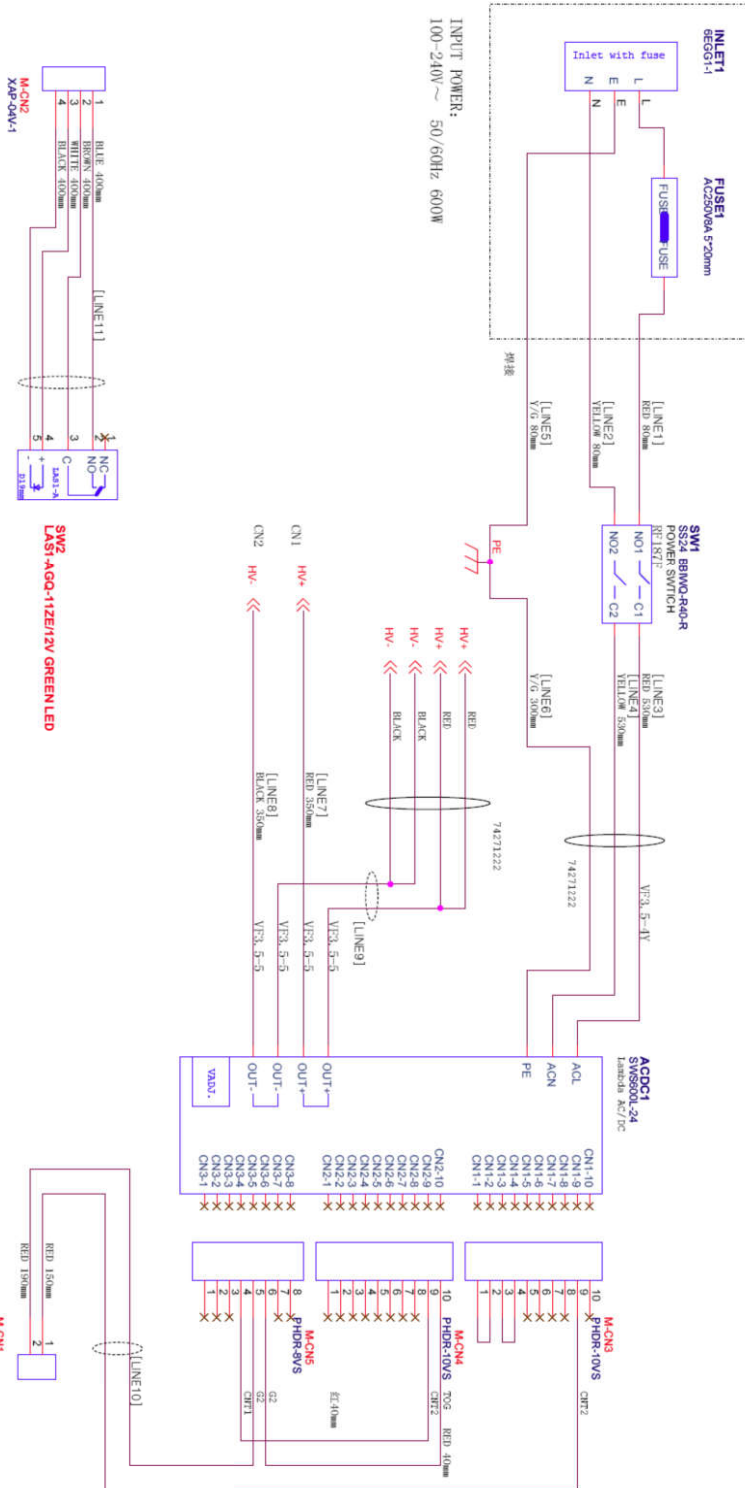
		inserted	UNLOCKER port, and switch on power again after shutdown
5	After detecting sample position, the actual temperature displays 0C or 100C	The module temperature sensor is damaged. It accompanies panel red lamp alarm and a software prompt, and the instrument automatically stops running.	Contact the supplier or manufacturer
		The power switch is turned on only after the programme starts running	Switch on the power and restart the programme
		The programme is searching communication port and during this period data would be not sent.	If the trouble still exists after researching, contact the supplier or manufacturer
6	Module temperature heating or cooling rate obviously decreases or temperature control is incorrect.	The ventilation opening is blocked.	Clear the ventilation opening
		Loose connection wire	Contact the supplier or manufacturer
		The refrigerating sheet is damaged	Contact the supplier or manufacturer
		Fan is damaged or fails to run	Contact the supplier or manufacturer
		The temperature sensor is damaged	Contact the supplier or manufacturer
7	The module fails to heat and refrigerate.	The inside of the instrument is damaged	Contact the supplier or manufacturer
		The refrigerating sheet is damaged	Contact the supplier or manufacturer

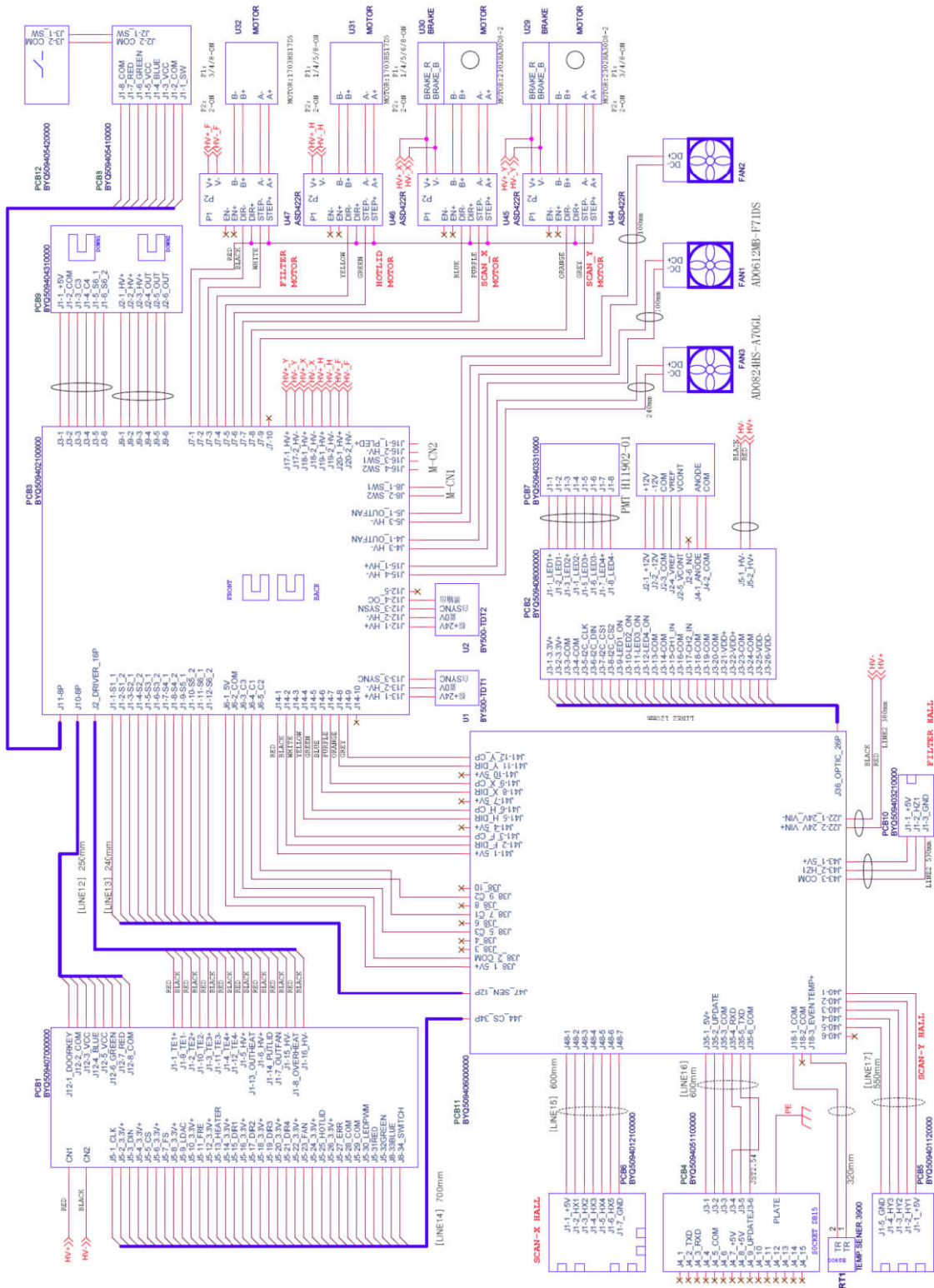
		During hot-lid heating-up	Waiting until the hot-lid temperature comes to the target value. When stopping running, module temperature holds down 30C automatically.
8	Abnormal temperature or fluorescence curve: straight line or loss of partial data	The running programme is infected by a virus	After removing the virus, re-install the application software
		Computer configuration fails to meet requirements or the setup of communication port is not appropriate.	Configure as per requirements
9	Yellow lamp on panel lights on	The module is not fully pushed in and the optic coupler fails to detect the module	Push in again, if the light is still on, contact the supplier or manufacturer
10	The hot-lid is will not heat	Thermal-sensitive fuse is damaged	Contact the supplier or manufacturer
		Loose plug-pieces	Contact the supplier or manufacturer
		Heating elements of hot-lid is damaged	Contact the supplier or manufacturer
		Temperature sensor of hot-lid is damaged	Contact the supplier or manufacturer
11	Under no test tube state, the fluorescence value difference between wells increases or the background value is	The test tube well or hot-lid is contaminated, or baseline*****.b96 background parameters are set incorrectly.	Eliminate contamination. Each instrument shall correspond to baseline96 document.

	very high.		After perennial use, offset would occur in the optical elements. In this case, contact the manufacturer to re-calibrate the background value.
12	Reagent evaporation	The PCR tube cap does not sealing tightly enough.	Change consumable to one with a tighter fitting cap.
13	Signal crosstalk among channels	Dye signal crosstalk among channels can happen.	You can measure by using “Crosstalk Measurement” and save parameters to modify.
14	Fluorescence detection value -abnormal	Irradiation by external strong light	Switch off external light source, or remove instrument from external light source
		During a programme run, the hot-lid is opened	Close the hot-lid (detection result unreliable)
		The photo-electric system is damaged	Contact the supplier or manufacturer

Caution: During the warranty period, opening the instrument casing to inspect the internal workings will invalidate the warranty. If any problems should arise please contact the supplier or manufacturer in the first instance.

Appendix: LineGene 9600 Plus wiring







Hangzhou Bioer Technology Co., Ltd.



Hangzhou Bioer Technology Co., Ltd.

1192 BinAn Rd, Binjiang District, 310053 Hangzhou,

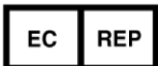
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