Fluorescent Quantitative Detection System

Quant Gene 9600 Series

Instruction for Use



🗇 🕻 🖾

AttentionUsers are recommended to read the contents of this manual thoroughly before
operating the Bioer 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.

Caution: Copyright reserved. The Bioer Co. reserves the right to modify this manual at any time without notice.

The manual contains copyright protected and patented material. Without prior written consent from Hangzhou Bioer Technology Co., Ltd., any part of the manual shall not be duplicated, reproduced or translated into any other language.

Thank you for your purchase of this product. Before initial use of this instrument, please read this manual thoroughly !

File No.: BYQ6619000000ESM

File Version: July 2021 Version 2.0

provided may be compromised.

Important Notes

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

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 classI, the protection degree is IP20. It is intended for indoor use
Note:	The instrument complying with the Standard YY0648/IEC61010-2-101 is used for
	IVD Medical Equipment.

a) Instrument earth

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

b) Keeping apart from the live circuit

Operators are not allowed to disassemble instrument protection, replace components or make

internal adjustment without authorization. If necessary, it must be completed by certified professional maintenance personnel. It is forbidden to replace components when power supply is connected.

c) Use of power supply

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

d) Power wire

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

e) Insertion and withdrawal of power cable

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

f) Placement of instrument

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

The openings on this instrument are for ventilation purposes and in order to avoid 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. When multiple instruments are used at the same time, the distance between each instrument should not be less than 50cm.

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

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

g) Notes during operation

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

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

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

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

- **Caution**: If any of the following should occur, you should immediately switch off the power supply, withdraw the power plug from the power socket, and contact the supplier to effect a repair: Repairs can only be carried out by suitably qualified engineers.
 - Liquid gets inside the instrument.
 - The instrument is rained upon or water is spilled over it.
 - The instrument works abnormally, 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 deal with potential contagious matter such as body's tissue sample or reagent, which is likely to touch skin, protecting glove or other protecting measures are need to be used.

h) Re-transport

If the instrument needs to be transported again, the detection hole position and the instrument

should be thoroughly cleaned and sterilized with ultraviolet light before transportation.

- i) Warning Sign
 - Warning identification

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

• Warning mark

(1) (M) HOT SURFACE!

Warning! When "HOT SURFACE!" is pasted in the instrument, it means that the metal part (module) near this sign shall not be touched with any part of the body during the operation of the instrument or a period of time immediately after the operation of the program to avoid burns !

Warning!The operator may come into contact with or remain substances harmful to the
organism or infectious substances during the use of the instrument. The operator
should be aware of its hazards and strictly comply with the relevant provisions
of the national PCR laboratory in accordance with the use environment of the
instrument. Operators need to be trained and qualified.

j) 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 DIRECTIVE 98/79/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 October 1998 on in vitro diagnostic medical devices.

Date of manufacture		Indicates the date when the medical device was manufactured.						
RoHS	ROHS	Restriction on the use of certain hazardous materials(restriction of hazardous substances)						
Consult instructions for use	Ĩ	Indicates the need for the user to consult the instructions for use.						
Serial number	SN	Indicates the manufacturer's derail number so that a specific medical device can be identified.						
Catalogue number	REF	Indicates the manufacturer's catalogue number so that the medical device can be identified.						
In vitro diagnostic medical device	IVD	Indicates a medical device that is intended to be used as an <i>in vitro diagnostic medical</i> <i>device</i> .						
CE mark	CE	Indicates the medical device meets the CE related Directives.						
Manufacturer		Indicates the medical device manufacturer.						
Authorised representative in the European Community	EC REP	Indicates the authorized representative in the European Community.						
Up	<u><u>1</u>1</u>	Indicates that the correct position of the transport package is vertical upward.						
Fragile	T	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	2	Maximum stacking layer of the same package is 2.						
Temperature limit	-37ca	Indicates that the temperature limit of transportation package should be - 20 $^{\circ}$ C to 55 $^{\circ}$ C.						

k) Other symbols on the packaging

3 Maintenance of Instrument

If there is any stain on the surface of the instrument, it can be cleaned with soft cloth and cleaning paste. Heat conducting oil medium is not allowed in the module hole of this instrument.

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

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

4 Disposal

Potentially infectious material and all parts that may come in contact with 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.

5 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. for product registration.
	•	After unpacking, the packing box and packing materials should all be kept in case
		it is required for transportation or service in the future.
	•	In the event that a repair is required, the instrument must be disinfected before
		being sent to the repair department.
	•	It is recommended that service personnel disinfect the instrument on receipt in the
		service department, before commencing any scheduled work.
	•	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.

Contents

CHAPTER 1 GENERAL DESCRIPTION	. 1
1. INTENDED USE	. 1
2. PRINCIPLE.	. 1
- 3. FEATURES	. 2
4. PRODUCT STRUCTURE AND COMPOSITION	3
5. SPECIFICATION AND MODEL DESCRIPTION	4
6 PERFORMANCE PARAMETERS	 4
7. PRODUCTION DATE AND SERVICE LIFE	5
8 FUNCTION OVERVIEW OF SUPPORTING SOFTWARE	5
9. PRODUCT SOFTWARE VERSION	5
CHAPTER 2 PREPARATIONS	.6
	~
1. TRANSPORTATION AND STORAGE CONDITIONS OF THE INSTRUMENT	. 0
2. NORMAL WORKING CONDITION	. 0
5. PREPARATION BEFORE THE INSTRUMENT IS SWITCHED ON	. 0
4. INSTALLATION FRUCEDURE	.0
4.1 Installation of the instrument	.0
4.1.1 Scope of Delivery	.0 7
4.1.2 Transportation	, / 0
4.2 Unpacking Procedure	, ð
4.3 Installation of Supporting Software	, ð
4.3.1 Selection of a Computer System	ð
4.3.2 LineGene90xx Software Installation	, א ה
4.5.5 LineGene90xx Sojiware Uninsiau	, y
CHAPTER 3 START	10
1. CHECK BEFORE STARTING	10
2. BOOT	10
3. SOFTWARE STARTUP INTERFACE	10
	11
CHAPTER 4 ADSOLUTE QUANTIFICATION	11
1. DESIGN EXPERIMENT	11
1.1 Create New Absolute Quantitative Experiment	11
1.2 Detector Setting	12
1.3 Sample Information Setting	13
1.4 Reaction Plate Setting	14
1.5 Programme Setting	16
2. PREPARE FOR REACTION	17
3. RUN THE EXPERIMENT	18
3.1 Preparation for reagent sample	18
3.2 Run Fluorescence Curve	19
3.3 Run Temperature Curve	20
3.4 Programme Setting	21
3.5 Prompts which may occur during running	21
4. Experiment Analysis	22
4.1 Check Results	22
4.2 Adjusting Parameters and Re-analysis	29
5. EXPERIMENT REPORT	30
5.1 Designing a Report Template	30
5.2 Print Satting	31

5.3 Comprehensive Report	
5.4 Report Printing	
5.5 QC Summary	
6. DATA EXPORT	
6.1 Export to Database	
6.2 Experiment Filing	
6.3 Export Experiment Data to EXCEL	
6.4 Export Experiment Data to TEXT	
CHAPTER 5 RELATIVE OUANTITATIVE	
	24
1. DESIGN EAPERIMENT	
1.1 Create New Relative Quantitative Experiment	
1.2 Delector Setting	
1.5 Sample Information Setting	
1.4 Reaction Plate Setting.	
1.5 Programme Setting	
2. PREPARE FOR REACTION	
3. KUN THE EXPERIMENT	
3.1 Kun Fluorescence Curve	
3.2 Run Temperature Curve	
3.3 Programme Setting	
4. EXPERIMENT ANALYSIS	
4.1 Check Results	
4.2 Check Relative Quantification	46
4.3 Adjust Parameter Keanalysis	
5. EXPERIMENT REPORT	
5.1 Comprehensive Report	
5.2 QC Summary	
6. DATA EXPORT	
6.1 Export to Database	
6.2 Experiment Filing	
6.3 Export Experiment Data to EXCEL	
6.4 Export Experiment Data to TEXT	
CHAPTER 6 SNP	
1. DESIGN EXPERIMENT	
1.1 Create SNP Experiment	
1.2 Detector Setting	
1.3 Sample Information Setting	53
1.4 Reaction Plate Setting	55
1.5 Programme Setting	56
2. PREPARE FOR REACTION	
3. RUN THE EXPERIMENT	
3.1. Run Fluorescence Curve	59
3.2 Run Temperature Curve	60
3.3 Programme Setting	60
4. Experiment Analysis	61
4.1 Check Results	61
4.2 Adjust Parameter Re-analysis	
5. Experiment Report	65
5.1 Designing a Report Template	
5.2 Print Setting	
5.3 Comprehensive Report	
5.4 Report Printing	
5.5 QC Summary	
6. DATA EXPORT	68

6.1 Export to Database	
6.2 Experiment Filing	
6.3 Export Experiment Data to EXCEL	
6.4 Export Experiment Data to TEXT	68
CHAPTER 7 HIGH RESOLUTION MELTING	69
1. Design Experiment	69
1.1 Create High Resolution Melting Experiment	
1.2 Detector Setting	
1.3 Sample Information Setting	
1.4 Reaction Plate Setting	
1.5 Programme Setting	
2. PREPARE FOR REACTION	
3. RUN THE EXPERIMENT	
3.1. Run Fluorescence Curve	
3.2 Run Temperature Curve	77
3.3 Programme Setting	77
4. Experiment Analysis	
4.1 Check Results	
4.2 Adjust Parameter Re-analysis	
5. Experiment Report	
5.1 Comprehensive Report	
5.2 QC Summary	
6. DATA EXPORT	
6.1 Export to Database	
6.2 Experiment Filing	
6.3 Export Experiment Data to EXCEL	
6.4 Export Experiment Data to TEXT	88
CHAPTER 8 SERVICE	
CHAPTER 8 SERVICE 1. USER MANAGEMENT	
CHAPTER 8 SERVICE	
CHAPTER 8 SERVICE 1. USER MANAGEMENT 2. EXPERIMENT MANAGEMENT 2.1 Experiment Management	
CHAPTER 8 SERVICE 1. USER MANAGEMENT 2. EXPERIMENT MANAGEMENT 2.1 Experiment Management 2.2 Deleted Experiment Management	
CHAPTER 8 SERVICE 1. USER MANAGEMENT 2. EXPERIMENT MANAGEMENT 2.1 Experiment Management 2.2 Deleted Experiment Management 3. TEMPLATE MANAGEMENT	
CHAPTER 8 SERVICE. 1. USER MANAGEMENT. 2. EXPERIMENT MANAGEMENT 2.1 Experiment Management 2.2 Deleted Experiment Management. 3. TEMPLATE MANAGEMENT 4. USER LOGIN	
CHAPTER 8 SERVICE 1. USER MANAGEMENT 2. EXPERIMENT MANAGEMENT 2.1 Experiment Management 2.2 Deleted Experiment Management 3. TEMPLATE MANAGEMENT 4. USER LOGIN 5. CHANGE PASSWORD	
CHAPTER 8 SERVICE 1. USER MANAGEMENT 2. EXPERIMENT MANAGEMENT 2.1 Experiment Management 2.2 Deleted Experiment Management 3. TEMPLATE MANAGEMENT 4. USER LOGIN 5. CHANGE PASSWORD 6. SEE RUNNING EXPERIMENT	89 89 90 90 90 91 92 92 92 92 92 93
CHAPTER 8 SERVICE. 1. USER MANAGEMENT. 2. EXPERIMENT MANAGEMENT 2.1 Experiment Management. 2.2 Deleted Experiment Management. 3. TEMPLATE MANAGEMENT 4. USER LOGIN 5. CHANGE PASSWORD 6. SEE RUNNING EXPERIMENT CHAPTER 9 TOOL USAGE	
CHAPTER 8 SERVICE 1. USER MANAGEMENT 2. EXPERIMENT MANAGEMENT 2.1 Experiment Management 2.2 Deleted Experiment Management 3. TEMPLATE MANAGEMENT 4. USER LOGIN 5. CHANGE PASSWORD 6. SEE RUNNING EXPERIMENT CHAPTER 9 TOOL USAGE 1. CAIN SETTING	89
CHAPTER 8 SERVICE 1. USER MANAGEMENT 2. EXPERIMENT MANAGEMENT 2.1 Experiment Management 2.2 Deleted Experiment Management 3. TEMPLATE MANAGEMENT 4. USER LOGIN 5. CHANGE PASSWORD 6. SEE RUNNING EXPERIMENT CHAPTER 9 TOOL USAGE 1. GAIN SETTING 3. DETECTOP LIPPAPY	89 89 90 90 90 91 92 92 92 92 92 92 93 93 94 94
CHAPTER 8 SERVICE 1. USER MANAGEMENT 2. EXPERIMENT MANAGEMENT 2.1 Experiment Management 2.2 Deleted Experiment Management 3. TEMPLATE MANAGEMENT 4. USER LOGIN 5. CHANGE PASSWORD 6. SEE RUNNING EXPERIMENT CHAPTER 9 TOOL USAGE 1. GAIN SETTING 3. DETECTOR LIBRARY 4. CUSTOMIZED DVES	89 89 90 90 90 91 92 92 92 92 92 92 93 93 94 94 94
CHAPTER 8 SERVICE 1. USER MANAGEMENT 2. Experiment Management 2.1 Experiment Management 2.2 Deleted Experiment Management 3. TEMPLATE MANAGEMENT 4. USER LOGIN 5. CHANGE PASSWORD 6. SEE RUNNING EXPERIMENT CHAPTER 9 TOOL USAGE 1. GAIN SETTING 3. DETECTOR LIBRARY 4. CUSTOMIZE COLUMNS	89 89 90 90 90 91 92 92 92 92 92 92 93 94 94 94 94 94
CHAPTER 8 SERVICE 1. USER MANAGEMENT 2. EXPERIMENT MANAGEMENT 2.1 Experiment Management 2.2 Deleted Experiment Management 3. TEMPLATE MANAGEMENT 4. USER LOGIN 5. CHANGE PASSWORD 6. SEE RUNNING EXPERIMENT CHAPTER 9 TOOL USAGE 1. GAIN SETTING 3. DETECTOR LIBRARY 4. CUSTOMIZED DYES 5. CUSTOMIZE COLUMNS 6. COLUMN SELECTION	89 89 90 90 90 91 92 92 92 92 92 92 92 93 94 94 94 94 95 95
CHAPTER 8 SERVICE 1. USER MANAGEMENT 2. EXPERIMENT MANAGEMENT 2.1 Experiment Management 2.2 Deleted Experiment Management 3. TEMPLATE MANAGEMENT 4. USER LOGIN 5. CHANGE PASSWORD 6. SEE RUNNING EXPERIMENT CHAPTER 9 TOOL USAGE 1. GAIN SETTING 3. DETECTOR LIBRARY 4. CUSTOMIZE COLUMNS. 6. COLUMN SELECTION 7 SAMPLE COLUMN LIBRARY	89 89 90 90 90 91 92 92 92 92 92 92 92 92 92 92
CHAPTER 8 SERVICE. 1. USER MANAGEMENT 2. Experiment Management 2.1 Experiment Management 2.2 Deleted Experiment Management 3. TEMPLATE MANAGEMENT 4. USER LOGIN 5. CHANGE PASSWORD 6. SEE RUNNING EXPERIMENT CHAPTER 9 TOOL USAGE 1. GAIN SETTING 3. DETECTOR LIBRARY 4. CUSTOMIZE COLUMNS 6. COLUMN SELECTION 7. SAMPLE COLUMN LIBRARY 8 INSTRUMENT CALIRPATION PAPAMETERS	89 89 90 90 90 91 92 92 92 92 92 93 94 94 94 94 94 94 95 95 96 96
CHAPTER 8 SERVICE. 1. USER MANAGEMENT 2. Experiment Management 2.1 Experiment Management 2.2 Deleted Experiment Management. 3. TEMPLATE MANAGEMENT 4. USER LOGIN 5. CHANGE PASSWORD 6. SEE RUNNING EXPERIMENT CHAPTER 9 TOOL USAGE 1. GAIN SETTING 3. DETECTOR LIBRARY 4. CUSTOMIZED DYES 5. CUSTOMIZE COLUMNS 6. COLUMN SELECTION 7. SAMPLE COLUMN LIBRARY 8. INSTRUMENT CALIBRATION PARAMETERS 9. MEASURE CROSSTALK CALIBRATION PARAMETERS	89 89 90 90 90 91 92 92 92 92 93 94 94 94 94 94 94 94 94 94 94 94
CHAPTER 8 SERVICE. 1. USER MANAGEMENT 2. Experiment Management 2.1 Experiment Management 2.2 Deleted Experiment Management. 3. TEMPLATE MANAGEMENT 4. USER LOGIN 5. CHANGE PASSWORD 6. SEE RUNNING EXPERIMENT CHAPTER 9 TOOL USAGE 1. GAIN SETTING 3. DETECTOR LIBRARY 4. CUSTOMIZE D DYES 5. CUSTOMIZE COLUMNS 6. COLUMN SELECTION 7. SAMPLE COLUMN LIBRARY 8. INSTRUMENT CALIBRATION PARAMETERS 9. MEASURE CROSSTALK CALIBRATION PARAMETERS 10. CROSSTALK CALIBRATION PARAMETERS	89 89 90 90 90 91 92 92 92 92 93 94 94 94 94 94 94 94 94 94 94 94
CHAPTER 8 SERVICE 1. USER MANAGEMENT 2. EXPERIMENT MANAGEMENT 2.1 Experiment Management 2.2 Deleted Experiment Management 3. TEMPLATE MANAGEMENT 4. USER LOGIN 5. CHANGE PASSWORD 6. SEE RUNNING EXPERIMENT CHAPTER 9 TOOL USAGE 1. GAIN SETTING 3. DETECTOR LIBRARY 4. CUSTOMIZED DYES 5. CUUMIN SELECTION 7. SAMPLE COLUMN LIBRARY 8. INSTRUMENT CALIBRATION PARAMETERS 9. MEASURE CROSSTALK CALIBRATION PARAMETERS 10. CROSSTALK GAIN PARAMETER MEASUREMENT 11. SYSTEM MAINTENANCE	89 89 90 90 90 91 92 92 92 92 92 93 94 94 94 94 94 94 94 94 95 95 95 96 97 97
CHAPTER 8 SERVICE 1. USER MANAGEMENT 2. Experiment Management 2.1 Experiment Management 2.2 Deleted Experiment Management 3. TEMPLATE MANAGEMENT 4. USER LOGIN 5. CHANGE PASSWORD 6. SEE RUNNING EXPERIMENT CHAPTER 9 TOOL USAGE 1. GAIN SETTING 3. DETECTOR LIBRARY 4. CUSTOMIZE COLUMNS 6. COLUMN SELECTION 7. SAMPLE COLUMN LIBRARY 8. INSTRUMENT CALIBRATION PARAMETERS 9. MEASURE CROSSTALK CALIBRATION PARAMETERS 10. CROSSTALK GAIN PARAMETER MEASUREMENT 11. SYSTEM MAINTENANCE 12. UPGRADE EXPERIMENT FILE FORMAT	89 89 90 90 90 91 92 92 92 92 92 93 94 94 94 94 94 94 94 94 94 94 94
CHAPTER 8 SERVICE	89 89 90 90 91 92 92 92 92 93 94 94 94 94 94 94 94 94 94 94 94
CHAPTER 8 SERVICE 1. USER MANAGEMENT 2. Experiment Management 2.1 Experiment Management 2.2 Deleted Experiment Management 3. TEMPLATE MANAGEMENT 4. USER LOGIN 5. CHANGE PASSWORD 6. SEE RUNNING EXPERIMENT CHAPTER 9 TOOL USAGE 1. GAIN SETTING 3. DETECTOR LIBRARY 4. CUSTOMIZED DYES 5. CUSTOMIZE COLUMNS 6. COLUMN SELECTION 7. SAMPLE COLUMN LIBRARY 8. INSTRUMENT CALIBRATION PARAMETERS 9. MEASURE CROSSTALK CALIBRATION PARAMETERS 10. CROSSTALK GAIN PARAMETER MEASUREMENT 11. SYSTEM MAINTENANCE 12. UPGRADE EXPERIMENT FILE FORMAT 13. TA CALCULATOR	89 89 90 90 90 91 92 92 92 92 92 93 94 94 94 94 94 94 94 94 94 94
CHAPTER 8 SERVICE 1. USER MANAGEMENT 2. Experiment Management 2.1 Experiment Management 2.2 Deleted Experiment Management 3. TEMPLATE MANAGEMENT 4. USER LOGIN 5. CHANGE PASSWORD 6. SEE RUNNING EXPERIMENT CHAPTER 9 TOOL USAGE 1. GAIN SETTING 3. DETECTOR LIBRARY 4. CUSTOMIZED DYES 5. CUSTOMIZE COLUMNS 6. COLUMN SELECTION 7. SAMPLE COLUMN LIBRARY. 8. INSTRUMENT CALIBRATION PARAMETERS 9. MEASURE CROSSTALK CALIBRATION PARAMETERS 10. CROSSTALK GAIN PARAMETER MEASUREMENT. 11. SYSTEM MAINTENANCE 12. UPGRADE EXPERIMENT FILE FORMAT 13. TA CALCULATOR CHAPTER 10 OTHER FUNCTIONS	89 89 90 90 90 91 92 92 92 92 93 94 94 94 94 94 94 94 94 94 94
CHAPTER 8 SERVICE. 1. USER MANAGEMENT. 2. EXPERIMENT MANAGEMENT 2.1 Experiment Management 2.2 Deleted Experiment Management. 3. TEMPLATE MANAGEMENT 4. USER LOGIN 5. CHANGE PASSWORD 6. SEE RUNNING EXPERIMENT CHAPTER 9 TOOL USAGE 1. GAIN SETTING. 3. DETECTOR LIBRARY. 4. CUSTOMIZE D DYES. 5. CUSTOMIZE COLUMNS. 6. COLUMN SELECTION 7. SAMPLE COLUMN LIBRARY. 8. INSTRUMENT CALIBRATION PARAMETERS 9. MEASURE CROSSTALK CALIBRATION PARAMETERS 10. CROSSTALK GAIN PARAMETER MEASUREMENT 11. SYSTEM MAINTENANCE 12. UPGRADE EXPERIMENT FILE FORMAT 13. TA CALCULATOR CHAPTER 10 OTHER FUNCTIONS 1. INSTRUMENT OPERATION	89 89 90 90 90 91 92 92 92 92 93 94 94 94 94 94 94 94 94 94 94
CHAPTER 8 SERVICE	89 89 90 90 90 90 91 92 92 92 92 92 93 93 94 94 94 94 94 94 94 94 94 94 94 94 94 94

1.2 Disconnect	
1.3 Instrument Information	
2. DATA QUERY	
3. System Help	
CHAPTER 11 MAINTENANCE	
1. REGULAR CLEANING	
2. ANALYSIS AND TROUBLESHOOTING	
APPENDIX: QUANT GENE 9600 SERIES WIRING	

Chapter 1 General description

This chapter mainly describes the intended use, principle, characteristics, specifications, performance parameters and software functions of the instrument.

1. Intended use

The Fluorescent Quantitative Detection System is an automated instrument for quantitative analyses the related DNA/RNA in human sample using the polymerase chain reaction fluorescent quantitative detection. The instrument is for in vitro diagnostic only. Application areas include research into the human genome, forensics, cancer, tissue, population biology, paleontology, zoology and botany and in clinical diagnosis of virus, cancer and research.

The Fluorescent Quantitative Detection System is intended for use by professional user trained in molecular biological techniques and the operation of The Fluorescent Quantitative Detection System.

2. Principle

The Fluorescent Quantitative Detection System is based on the Polymerase chain reaction. Its principle is based on the use of DNA polymerase which is an in vitro replication of specific DNA sequences. This method can generate tens of billions of copies of a particular DNA fragment (the sequence of interest, DNA of interest, or target DNA) from a DNA extract (DNA template). We can therefore amplify nucleotide sequences from infinitesimal amounts of DNA extract. PCR is therefore a technique of purification or cloning.

The principle of the PCR is based on the temperature variations of heating and coolingthermocycling reaction divided into three steps:

Denaturation : The dsDNA becomes single-stranded at a higher temperature during denaturation. Here hydrogen bonds between two DNA strands break.

Annealing: in The primer binds or anneals to its exact complementary sequence on a DNA during the annealing step. The primer provides a site for the initiation of synthesis.

Extension: Taq DNA polymerase uses the 3' end of the primer and starts DNA synthesis by adding nucleotides to the growing DNA strand.

All three steps are repeated for 25 to 40 cycles and in each cycle the DNA becomes double.

The PCR machine is known as a thermocycler. This machine is simply a heating block (just like

our iron) which provides the constant temperature and even rapidly changes between two temperature states.

The machine has a lower block of metal having deep wells for putting PCR tubes. Also, the temperature of the inner environment is maintained by the heating block present on the upper side of the lead. Further, the machine contains the display, power on and off switch, and cooling assembly. The machine has the ability to heat and cool the PCR tube in a short period of time.

Real-time fluorescent quantitative PCR technology refers to the method of adding fluorescent groups to the PCR reaction system, using the accumulation of fluorescent signals to monitor the entire PCR process in real time, and finally quantitatively analyzing the unknown template through the standard curve.

3. Features

- New, user-friendly operation, operation interface, smooth operation
- Fluorescence real-time detection method is adopted to realize simultaneous amplification and detection in the same tube without post-processing
- Advanced thermoelectric refrigeration technology ensures super high speed heat cycle system heating, fast and stable refrigeration
- Multi-point temperature control ensures higher temperature uniformity of 96 sample wells
- 6 partition temperature control function
- Stable and accurate gradient functions of $1 \sim 36^{\circ}$ C ensure optimized PCR conditions
- the thermostatic function of SOAK allows the PCR reagent to be stored at low temperature
- Long life LED excitation light source requires no maintenance
- Advanced fiber conduction technology makes photoelectric detection system more sensitive and reliable
- Real-time dynamic monitoring of the whole process of PCR amplification was carried out Real-time dynamic monitoring of the whole process of PCR amplification was carried out
- Wide linear range, initial DNA copy Numbers up to 10 orders of magnitude do not require gradient dilution
- There is no need to turn on the PCR reaction tube, which can avoid product contamination during and after PCR and ensure the accuracy of the results
- Multi-color fluorescence detection in a single reaction obtains more information
- The application of thermal cover technology has realized the oil-free operation of PCR
- Chinese language interface, flexible program setting, comprehensive analysis and

reporting functions, all parameters can be stored

- Multiple or single sample reports can be printed
- The automatic, accurate and timely service of remote network provides the most advanced technical support for the 96-well quantitative PCR analyzer

4. Product Structure and Composition

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

The external appearance of the Fluorescent Quantitative Detection System is described as below:





Front view

Indication of the items

- 1. Display
- 2. USB interface
- 3. Start switch
- 4. Case body
- 5. Network interface
- 6. USB interface
- 7. Standard power outlet
- 8. Power switch

Back view

5. Specification and Model Description



Specification:



6. Performance Parameters

Model	FQD-96C							
Sample size	96×0.2ml (Suitable for single tube, 8 row tube and 96-well plate (no skirt board, half skirt board))							
Detection channel	F1	F1 F2 F3 F4 F5 F6						
Applicable dye	FAM, SYBR Green I	VIC, HEX, TET, JOE,	ROX, TEXAS -RED	ROX,Cy5TEXASQuasarRED670		Optional		
Module operating temperature range	4°C~99.9°C(Minimum setting scale:0.1°C)							
Average heating rate	When rising from 50°C to 90°C, it should be no less than 3.5°C/s							
Average cooling rate	From 90°C to 50°C, should not be less than 3.0°C/s							
Module temperature control accuracy	Should be no greater than 0.1 °C							
Temperature uniformity	The temperature difference is within ±0.3°C							
Temperature control accuracy of hot cover	105°C±5°C							
Fluorescence intensity test repeatability	CV≤3%							
Mode of operation	Continuous operation							
Operating system	Windows XP/Windows Vista/Windows7/Windows8							

Input power	$100\text{-}240 ext{V} \sim 50 ext{Hz}$ 1000VA			
Overall dimensions	490mm×290mm×391mm			
Weight	28kg			

7. Production Date and Service Life

Production date: see label for details.

Product life: 5 years

8. Function Overview of Supporting Software

- a) Parameter setting function (including temperature, time, cycle number, rise and drop rate, detection channel selection);
- b) Note function of text content;
- c) Sample data recording function (sample number, sample name, sample data);
- d) File operation display function (PCR thermal cycle data display, fluorescence detection data display, real-time display of various data during the operation of the instrument);
- e) Test data analysis function (analysis function can be used alone without instrument connection);
- f) Analysis results output function (one can output the analysis results to other types of files, such as :EXCEL, TXT files; be able to query and print the analysis results; one can change the print format and select the print item);
- g) File storage function (setting data, running data, analysis results);
- h) Fault protection and alarm function.

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

9. Product Software Version

Release version of this product software: V1

Chapter 2 Preparations

This chapter mainly introduces the use, transportation and storage conditions, structure composition, software installation/unloading, and preparation before starting up the Quant Gene 96xx series fluorescence quantitative PCR analyzer.

1. Transportation and Storage Conditions of the Instrument

Ambient temperature: -20°C~55°C

Relative humidity:≤80%

Atmospheric pressure:75kPa~106kPa.

2. Normal Working Condition

Ambient temperature:10°C~30°C

Relative humidity:≤70%

Atmospheric pressure: $100-240V \sim 50Hz \ 1000VA$

Caution: Before using the instrument, please confirm whether the Working Conditions meet the above requirements. Note that the power socket is a 3-hole socket with reliable grounding.

3. Preparation before the Instrument is Switched on

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

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

11 1 1

. .

4. Installation Procedure

- 4.1 Installation of the instrument
- 4.1.1 Scope of Delivery

Caution:	Fluorescent Quantitative	Detection	System	is	heavy	(28kg),	It	needs	two	persons
	moved out from the case	carefully!								

The components listed in the below packing list will be delivery together with the instrument.

No.	Title	Model and Specification	Unit	Amount	Remarks
1	Fluorescent Quantitative Detection System	FQD-96C	Set	1	The instrument
2	Power cable	250V 10A □	Piece	1	Accessory (optional)
3	Power cable	125V 12A □	Piece	1	Accessory (optional)
4	Fuse	250V 12A	Piece	2	Accessory
5	Wireless mouse and keyboard kit	Logitech MK270 Black	set	1	Accessory
6	USB flash disk (BIOER)	Quant Gene 9600	Piece	1	Accessory
7	Touch Screen Software User Manual	/	Сору	1	Following file
8	Instruction for use	/	Сору	1	Following file
9	Performance test table	/	Сору	1	Following file
10	Packing List	/	Сору	1	Following file
11	Precautions of Using QuantGene 9600	/	Сору	1	Following file
12	Pressure balance plate	/	Piece	1	Accessory
13	Finished network cable	/	Piece	1	Accessory
14	Silicone pad	/	Piece	1	Accessory

4.1.2 Transportation

Please observe the following Safety Notes when transporting and storage the Fluorescent Quantitative Detection System:

The Fluorescent Quantitative Detection System is supplied in an aluminium case. Visually inspect the box for damage before delivery.

- Ensure that transport and storage temperatures conform to the technical data.
- Always place the device on a stable surface.
- Check product information on the box.
- Visually inspect the box for loose or broken parts.

If the package had been damaged in transit, it is particularly important that you retain it for inspection by the carrier in case there has also been damaged to the instrument.

Neither the manufacturer nor its agents can be held responsible for any damage incurred intransit, but the manufacturer will make every effort to help obtain restitution from the carrier.

If any parts are damaged, contact Bioer or the distributer(s).

4.2 Unpacking Procedure

Please observe the following safety notes when unpacking, storing the Fluorescent Quantitative Detection System:

- The Fluorescent Quantitative Detection System is supplied in an aluminum case. Visually inspect the container for damage before opening.
- Move the packed instrument to its site of operation. Unpack Fluorescent Quantitative Detection System and accessories carefully with the arrows on the transport package pointing upwards. Remove the instrument from the package and place it on a level surface.
- Check if all system components are presents using the delivery note.
- Ensure that transport and storage temperatures conform to the technical data.
- Place the device on a stable work surface.
- Compare the serial number on the rear panel of the device with the serial number on the delivery note.
- Visually inspect the instrument for loose, bent or broken parts.
- Retain the packaging for use when storing for long periods or to return the device to the manufacturer.

Caution: When unpacking, use Packing list described in Chapter 4.1.1 to ensure that all components are present.

4.3 Installation of Supporting Software

4.3.1 Selection of a Computer System

System environment

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

Operating environment: Net Framework 4.0

Other software: PDF reader

Minimum configuration:

Processor: Intel Core i3

Memory: 2GB Hard disk:10GB

4.3.2 LineGene96xx Software Installation

Double click PcrServer installation file (PcrServerSetup.exe) \blacktriangleright Display the installation interface (select the installation language) \blacktriangleright Set installation path \blacktriangleright install Double click LineGene96xx installation file (LineGene96xxDiagnosisSetup.exe) \blacktriangleright Display the installation interface (select the installation language) \blacktriangleright Set installation path \blacktriangleright install

4.3.3 LineGene96xx Software Uninstall

Control panel ►Add/remove programs ► PcrServer ►uninstall Control panel ►Add/remove programs ►LineGene96xx ►uninstall

Chapter 3 Start

1. Check before Starting

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

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

2. Boot

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

Step 2: after entering the operating system, start the Quant Gene 96xx series real-time fluorescence quantitative PCR analyzer.

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

3. Software Startup Interface

Double click any software shortcut icon of the LineGene 9600 series real-time quantitative PCR analyzer on the desktop, the corresponding startup screen will appear.



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

Chapter 4 Absolute Quantification

1. Design Experiment



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

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

CR LineGene	9600		_					
File	Service	Instrument	Tools	Report	Data Summary	Help		
🗋 New 🖣	🗕 📔 💿 Wizar	d 🛛 🔗 Open	📄 Save 🗸 📔	💽 Export B	Experiment 🛛 🗌	Open/close	e Rack	
Home								
Ab	solute Absol	ute Relative	Relative	HRM		IP SNP	Open	

1.2 Detector Setting

1. Click **Setup** ► **Detector**

Setup	
Detector	0
Sample	0
Plate	0
Program	0

2. Input experiment properties

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

Experiment Properties						
Experiment Name:	20111117_Experiment	C	remark			
User Name:	user	Comment:				

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.

C Detecto	or Library								×
Add	Modify	Delete							
Detector	Reporter	Color	Master Mix	Primer	Probe	Supplies	Batch Number		
Target1	FAM								
Target2	FAM								
								Select	

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

Detectors	Add Detector	Add Assay	Delete Detector	Delete Assay	Add	Detector From Lib	rary	
Detector	Reporter	Color	Master Mix	Primer	Probe	Supplies	Batch Number	
Target1	FAM							
Target2	FAM							

4. Set up reference dye

Reference Dye	
VIC	

1.3 Sample Information Setting

1. Click Setup ► Sample

Setup	۲
Detector	0
Sample	0
Plate	0
Program	0

2. Add sample information

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

b.	Batch	addition:	click Batc	h Add 🕨	the Batch	Add	window	will	pop	u	3

R Batch Add	
Start Sample Id a	Sample Count 5 💌
	Add Cancel

3. Delete sample information

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

- b. Delete all: click **Clear All** ► deletes 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

Sample ID Batch Add	Delete	Clear All	Import Samples Info	Export Samples Info
---------------------	--------	-----------	---------------------	---------------------

5. Set up sample information

Samples	_			
Sample Id	Color	Sample Name	Sampling Time	Submitting Date
al		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

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.

C Edit D	etector Li	brary					×
Detector Na	ime: Target3						
Add	Delete						
Reporter	Color	Master Mix	Primer	Probe	Supplies	Batch Number	
FAM	-						
-							
						_	
						0	K Cancel

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

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



F	Plate Setup 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											

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** \blacktriangleright new window will pop up \blacktriangleright 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 sectionf. Set up the hot-lid temperature and liquid volume



2. Prepare for Reaction



The user should make full preparations prior to the experiment:

- Ensure appropriate materials are used.
- Ensure the arrangement of the PCR reaction plate is consistent with the setting layout of the reaction plate in Section 1.4.

3. Run the Experiment



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

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

3.1 Preparation for reagent sample

• Prepare reagent: Quant Gene 9600 series real-time fluorescence quantitative PCR analyzer adopts 0.2ml centrifuge tube to place reagent samples, and $10\mu l \sim 50\mu l$ is recommended for the best reaction system for samples.

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

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

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



3.2 Run Fluorescence Curve

1. Click **Run > Fluorescence Curve**



2. Click Start Run

Run Status	
	Serial No.:
Start Run	
	-

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



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).
- 4. After it starts running, the user can:
 - a. Skip the current stage
 - b. Add a cycle
 - c. Delete a cycle
 - d. Stop run



3.4 Programme Setting

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

3.5 Prompts which may occur during running

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

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

4. Experiment Analysis



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.

4.1 Check Results

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



4.1.2 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



4.1.3 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



4.2 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

0	Analysis S	ettings				
ſ	Ct Settings	Advanced Setting	s Standard	Curve Setting	is .	
	The stage to u	use for Ct analysi	s: Stage 2			
	The algorithm	to calculate Ct:	Baseline Thre	shold 🔽	S Fitting	
	Assay Item	Threshold	Start Cycle	End Cycle		arget1 - SYBR
	target1 - SYB	R Auto	Auto	Auto		Auto Ihreshold Threshold: 293.41
						🖉 Auto Baseline
						Start Cycle: 3 🔷 End Cycle: 15 🔷
						Apply Analysis Settings Cancel

5. Experiment Report



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

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.

🛃 Report Des	🖁 Report Designer - D:\LineGene9600\Scientific\config\report\Absolute\default.rpt												
🕴 📄 New 🔗 Oper	n 🔚 Save 🛛 🗋 Preview	🖂	View 👻 🗡 Delete Selected Controls 🖳 🗐 💼 🗒 🧃	🛞 Settings									
Available controls	Used controls												
Common Cont Static Tex Dynamic T Static Ima Line Amplificati Quantifica Known Contro Static Tex Dynamic T	rols t ext ge on Curve ton Analysis Result Is t Controls ext Controls		[Hospital] [Report] Name: [Name] Sex: [Sex] Age: [Age] HospitalNo.[hospitalNo.] Test Item Test Result Reference Conclusion application Curve application Curve	reconstruction									
			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1										
Appearance	MiddleDiabt		sseeng										
BackColor	White		^{ro} 2000										
E Border	Solid, 1, False, False, False												
Color	Black		1000										
Font	Tahoma, 8.25pt		1000	3									
Text													
🗆 Data													
Tag													
🗆 Design			L	3									
DesignVisible	True			-									
Name	Label 10		and a second	-									
Layout			[Submitting Date] Report Date:[reportDate] Tester:[lester] Checker:[Checker]	Š.									
Location	93, 62												
Padding	0, 0, 0, 0			-									
E Size	100, 20												
Туре	Label												
Text text of the element													

5.2 Print Setting

 Click Report ► Print Template Setting ► the Print Template Setting window will open The user can set up the laboratory name, report name, reference value, tester, checker, amplification plot, default report template and paper size.

C Print Templ	ate Settings(Absolute)	X
_ Template Setup -		
Hospital		
Report		
Reference	100	
Tester		
Checker		
Amplification Pl	ot Setun	
Legend: Color	── LineStyle	
Print Setup		
Default Report 1	emplate default	
Paper Size A4	-	
Printer		- I
Use Default	Printer	
O Use Custom F	rinter	
	OK	

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..

nsoridate	ed Report											
Q Q	* =										Rep	ort Items
Experime Experime File Nam Run Time Gain:	ent Name: 2011 ent Type: Abso me: F:\l e: 2011 F1::	11104_11 blute LineGen 1/11/04 10, F2:6,	LineGe F1-60018: e9600\201 15:22:07 ;F3:2,F4	ene9600 (3 111104_1F1- 5 - 2011/11, 4, F5:7	Consolida 500183.fqd /04 16:22::	ated Rep 8	ort		1 / 8	ĺ	×××××××××	Basic Information Run Frogram Detectors Flot Plate Table Plate Amp. Curve(Linear) Amp. Curve(Log) Quan. Analysis Result Standard Curve
Hold Star	un Program —											Create Report
Targat	Insubation Time	Rata	Samling									
94	120	4	Campring									
PCR Stars	Croles:40											
Tarset	Incubation Time	Rate	2nd Temp	Step Size	Step Delay	Grad Temp.	Grad Ranse	Sampling				
95	5	4										
60	30	4						V				
					Cy3 ROX Cy5							
P												
i A U Tarr S C U Tarr	it U Target	s Target L Target	(Target	s s Target U Ta Target U Ta	7 U Targ U Targ U Targ	s U Target U Target	, i U Target U Target U Target	o 11 U Target U Target arget	:: U Target U Target			
L U Targ	it Farget	s Target Target Target	' L Target J Target	s s Target Target Target Target	, U Target U Target U Targe S Targe	t I Target	t Target U Target U Target U Target S 1	o ii U Tarpet U Tarpet U Tarpet arget S Tarpet	:: U Target U Target			
A U Targ C U Targ C U Targ C S Targ	st U Target et U Target et U Target et U St S Target sble Plate	s Target Target Target Target S Property	4 U Target U Target U Target S	i i i Target I arget Target Target Kd. Con. Sar	t U Targi U Targi U Targi S Targi S Targi	t U Target t U Target t S Target	, i U Target U Target U Target U Target S 1	o ti U Target U Target U Target U Target arget S Target	11 U Target			

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

Rej	oort Te	mplate: dei	ault			_	•	Prin	Print Setting								
ł	Select/	UnSelect	Select All Sa	mples					_		_	_	_			🔛 Print One Assay PerReport	
	Print	nt Sample Id Sample Name Test Item Name Sex Age C 04 target1		Case No.	Outpatient No.	Bed No.	Hospital No.	Nationality	Sampling Time 2011/12/15	Diagnosis	Notes						
	🔲 Assay Ites:SYBR Detect Concentration:7.82e+08 Conclusion:Positive																

5.5 QC Summary

1. Click **Report** ► **QC Summary**



2. Check the QC summary

Amp	lificatio	on Plot										I	QC Summary			
	Well		- Pl	otType	Line	ar		Show	F1 F	2 F3	F4	11	Description	Value	Use	Result
<u> </u>	1												Negative control with a Ct less than	38	\checkmark	
5	000									A			Positive control with a Ct greater than	30	\checkmark	
e 4	9 4000												Unknown without a Ct	N/A	\checkmark	
cenc	ğ 3000												Standard without a Ct	N/A	\checkmark	
Eluore	000	0	4	8	1	I I 6 20 Cyc	0 24 cle	1 28	1 32	1 36	1 40	a.,				
A01	A02	A03	A04	A05	A06	A07	A08	A09	A10	A11	A12					
B01	B02	B03	B04	B05	B06	B07	B08	B09	B10	B11	B12					
C01	C02	C03	C04	C05	C06	C07	C08	C09	C10	C11	C12					
D01	D02	D03	D04	DOS	DUG	D07	D08	D09	D10	D11	D12					
EU1	EU2	EU3	E04	EUS	EUG	EU/	EUS	E09	E10	E11	E1Z E10					
F01	F02	F03	C04	C05	C06	F07	C08	C00	F10	F11 611	F12 C12					
H01	H02	H03	H04	H05	H06	H07	H08	H09	H10	H11	H12					

6. Data Export



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

6.1 Export to Database

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

6.2 Experiment Filing

1. Click **Data Summary** ► **Archived Experiment Directory** ► the Experimental archive

storage directory window will pop up \blacktriangleright set up the storage path of file.

R Experimental archive storage directo	ry 🔯
Experiments in the following archive directory:	
D:\LineGene9600	
Change	
OK Cancel	

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 5 Relative Quantitative

1. Design Experiment



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

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** \blacktriangleright **Relative** on the toolbar
- b. Clicking **File** \blacktriangleright **New** \blacktriangleright **Relative** on the menu bar

CR LineGene	9600							
File	Service	Instrument	Tools	Report	Data Sumn	mary H	Help	
🗋 New 🗸	🖌 🛛 💿 Wizaro	d 📔 🔗 Open	🔚 Save 🗕 📔	Export E	Experiment 👻	Oper	n/close Rac	k
Home								
Ab	alute Absolu	ute Relative	Relative	HRM	HRM	SNP S	NP 🤇	Open

1.2 Detector Setting

1. Click **Setup** ► **Detector**

Setup	•
Detector	0
Sample	0
Plate	0
Program	0

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.

Detecto	r Library							
Add	Modify	Delete						
Detector	Reporter	Color	Master Mix	Primer	Probe	Supplies	Batch Number	
arget1	FAM							
farget2	FAM							
							Sele	Close

	Detectors	Add	Detector	E	Delete Detector	Add Detector	From Library				
ľ	Detector		Reporter		Color	Endogenous Contro	Master Mix	Primer	Probe	Supplies	Batch Num
	Target1		FAM								
	Target2		HEX	-		\checkmark					

4. Set up reference dye

Reference Dye

1.3 Sample Information Setting

1. Click Setup ► Sample



2. Add sample information

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

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

R Batch Add			X
Start Sample Id	a	Sample (Count 5 💌
		Add	Cancel

3. Delete sample information

```
a. Itemized deletion: select one sample \blacktriangleright click Delete \blacktriangleright 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

Sample ID Batch Add	Delete	Clear All	Import Samples Info	Export Samples Info
---------------------	--------	-----------	---------------------	---------------------

Samples	_	_			
Sample Id	Color	Sample Name	Sampling Time	Submitting Date	
a1			2013-12-06	2013-12-06	
a2			2013-12-06	2013-12-06	
a 3			2013-12-06	2013-12-06	
a4			2013-12-06	2013-12-06	
a5			2013-12-06	2013-12-06	

5. Set up sample information

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.

C Edit Dete	ctor Lib	rary						×
Detector Name:	Target3							
Reporter	Color	Master Mix	Primer	Probe	Supplies	Batch Number		
FAM 🔽								
						Ок	Cance	1

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

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

 Detectors 	Plate Setup	Well Tabl	•									1
Assay Item Property Con.			Zoom In	Zoom Out	Reset		Sample A	uto Arran	ge			
Target1 - FAM(GOI) 🔟 🕌	1	2 3	4	5	6	7	8	9	10	11	12	1
Target1 - HEX(HKG) 🔟 💌 🐼	A U Targe U Targe											
Concentration Unit copies/=1	в											
Samples Show Columns: Sample Name	с											
a2 Sample 2 a3 Sample 3 a4 Sample 4	D											
a5 Sample 5	E											
	F											
	G											
	н											

	F	late S	Setup	Well Ta	ble	_			
1		#	Well	Sample Id	Assay Item	Property	Dye	Con.	
I		1	A01		Target1	Unknown	FAM		
I		1	A01		Target2	Unknown	HEX		
		2	A02						
		3	A03						
		4	A04						
		5	A05						
		6	A06						
I		7	A07						
		8	A08						
		9	A09						
		10	A10						
l		11	A11						
ĺ		12	A12						

1.5 Programme Setting

1. Click Setup ► Programme

Setup	•
Detector	0
Sample	0
Plate	0
Program	0

2. Run Programme Setup

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

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** \blacktriangleright new window will pop up \blacktriangleright 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 sectionf. Set up the hot-lid temperature and liquid volume



2. Prepare for Reaction



The user should make full preparations prior to the experiment

- Ensure appropriate materials are used.
- Ensure the arrangement of the PCR reaction plate is consistent with the setting layout of the reaction plate in Section 1.4.

3. Run the Experiment



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

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)
- 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



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)
- 4. After it starts running, the user can:
 - a. Skip the current stage
 - b. Add a cycle
 - c. Delete a cycle
 - d. Stop run



3.3 Programme Setting

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

4. Experiment Analysis



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.

4.1 Check Results

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



4.1.2 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