Product information

Model：BVQ-1100

Product:：BVQ-1100 Real-time PCR Analyzer

Manufacturer

Bioguard Corporation

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Version Information

This manual may be updated without further notice.

Version：1.0

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Bioguard Corporation

International Symbols Description

Symbol	Description	Symbol	Description
	Keep away from open flame		Keep dry
	This side up		Handle with Care
	Fragile		Keep away from sunlight

▲ Table 1 Symbol Description

Technical Support and Warranty

Maintenance

This product is guaranteed for one year. Please keep the packing box for transportation, storage, or for use when product needs to be shipped for maintenance.

Bioguard is responsible for the safety, reliability and performance of this product under the following conditions:

◆ The analyzer is assembled, upgraded, or maintained by an authorized party.

◆ Relevant electrical equipment complies with national standard.

◆ This product is used in accordance with this instruction manual.

If the product is in the following circumstances, which is not covered by the warranty, the consumer may need to pay the full amount for maintenance costs.

◆ The product is damaged due to the following reasons:

● Improper operation

● Improper connection with other devices

● Accidents

◆ Modification of products without authorization

◆ Unrecognized product serial number

Technical Support

If technical support is needed, please contact your local distributor.

Please identify the following information:

◆ Type of malfunction or damage

◆ Product model and serial number

Safety Notice

Warning messages

The terms "danger", "warning", "caution", and "attention" used in the manual indicate hazards and remind users to pay attention to the process of operation according to the degree of hazards. A hazard is a source of potential harm or adverse effects to the environment or user.

⊘	Attention	Provide users with useful information and tips to ensure maximum performance of this product.
⚠	Caution	Refers to a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
⚠	Warning	Refers to a hazardous situation which, if not avoided, could result in death or serious injury.
⚠	Danger	Refers to an immediate hazard which, if not avoided, will result in death or serious injury.

Safety Information

⚠	Warning	Do not let the lens or image processing unit get wet and avoid the splashing reagents onto the device.
		Make sure that the ambient temperature during operation is kept at 10 ~ 35° C
		Please treat the amplification products of this instrument as biohazards and dispose of it properly.
		In order to safely use this product, the hospital must provide a 110V/220V, 50/60Hz mains power output socket with standard protective grounding.
		Do not plug or unplug the cable until the entire system is fully switched off.
⚠	Caution	Without the permission or written authorization of the manufacturer, the user shall not disassemble, modify or use various accessories that do not meet the manufacturer's regulations.
		Please switch off and unplug the device before cleaning it.
		Do not disassemble the instrument. Doing so may cause an electric shock.
		Please follow the instruction for cleaning the instrument.
		In order to prevent damaging the instrument, please carefully follow the instructions described in this manual.
		This instrument should be regularly calibrated and maintained by a qualified technical personnel.
		If you have any questions, please contact your local distributor.

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Chapter 1 Introduction

This manual provides general information and operating instructions of the real-time PCR instrument. This chapter provides an overview of hardware, software, and technical support information.

Summary of operating, applications and features:

The analyzer is designed for performing real time polymerase chain reaction (RT-PCR). It supports single or multiplex RT-PCR detection of interested targets in the clinical specimen. A color touchscreen and intuitive software makes the analyzer user friendly. The closed reaction system of the analyzer can reduce contamination and increase productivity. The software can collect and analyze data in real time, enables users to monitor data and print testing reports.

1.1 Intended use

The analyzer is intended to detect DNA/RNA of targeting pathogens using fluorescence-based reagents.

1.2 Purpose

Detecting infectious pathogens of pets.

1.3 Product features

The Real-time PCR analyzer provides rapid and accurate detection of multiple genes. Testing report can be monitored and printed.

1.4 Introduction of Qmini BVQ-1100 real-time PCR analyzer

1.4.1 Components

This product is composed of heating and cooling system, temperature monitoring system, fluorescence detection system, cooling system, and power cord, as shown in Fig1.
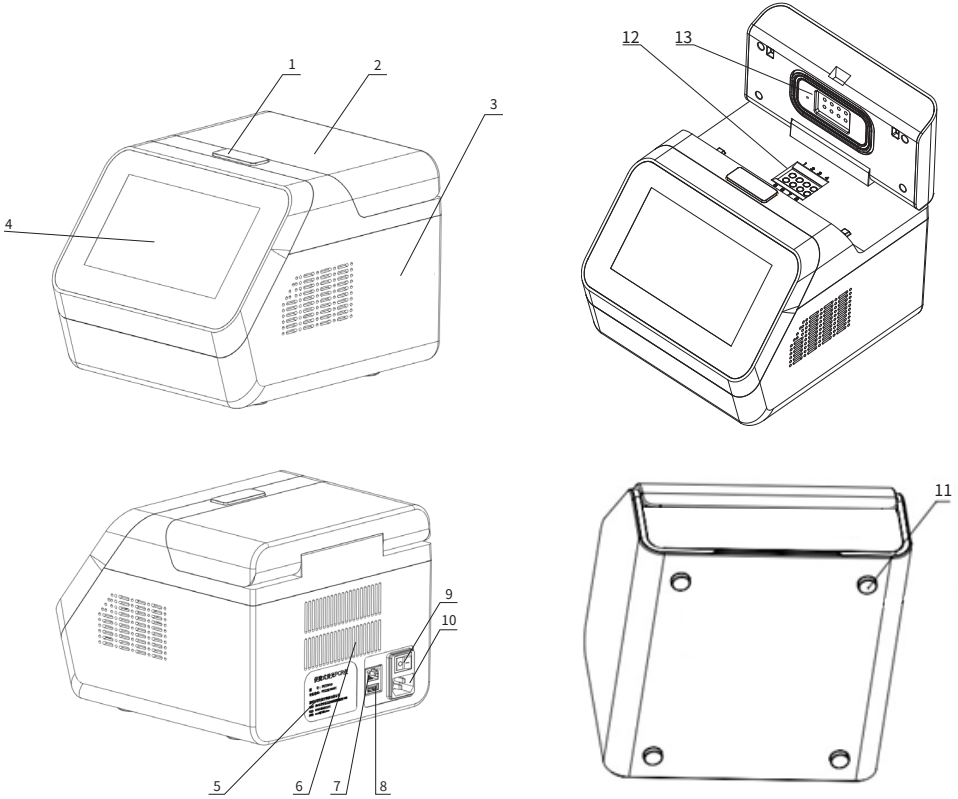
▲ Fig. 1 Components of Qmini BVQ-1100 real-time PCR

1. Lid switch	2. Lid	3. Left panel	4. Screen
5. Label	6. Vent	7. RJ45	8. USB port 2
9. Power switch	10. Power port	11. Case feet	12. Sample well
13. Heating lid			

1.4.2 Technical specifications and features

1.4.2.1 Analyzer specifications

Analyzer		Connectivity	
Dimensions:	268*236*188 mm	Network connection：	TCP/IP, Ethernet
Weight:	4.5 kg	**Operating Conditions**	
Power Supply		Temperature：	10℃ -35℃
Voltage:	AC 110V/220V	Humidity：	10%-95%RH
Frequency:	50HZ-60HZ	Atmospheric pressure：	Standard atmospheric pressure
		Altitude：	2000 meters
		Storage:	Away from moisture
		Noise:	50dB

1.4.2.2 Technical specifications

Thermal parameters	
➢ Temperature accuracy	±0.25℃
➢ Temperature uniformity	±0.25℃
➢ Temperature control accuracy	±0.1℃
➢ Rate of Heating and Cooling	6℃ /S
Optical parameters	
➢ FAM emission	520nm±10nm
➢ VIC emission	570nm±10nm
➢ FAM excitation	495nm±10nm
➢ VIC excitation	535nm±10nm
Interaction system parameters	
➢ Touch screen：	7" Color touch screen
➢ USB port：	Connect USB flash drive and barcode scanner
	Prohibit：The USB port of this instrument cannot be used for charging electronic devices
	Note: Before connecting the USB flash drive to the instrument, please format the USB flash drive to FAT32, and confirm that there is enough space (1 GB recommended) in the USB.

1.5   Unpacking and shipment

Do not turn the instrument upside down. After taking out the instrument and accessories, keep the packaging materials for use in shipments for repairs. Check the accessories according to the packing list.

In addition, you should receive all the optional parts and accessories you ordered. If there is anything missing, please contact our local distributor. If damage occurs during transportation, keep the packing materials for inspection and contact your local distributor immediately. According to the packing list provided by the manufacturer, please carefully check if the instrument and accessories are correct, and if there is any damage. Please fill in the product warranty card carefully and send it back to our company within one month of receiving the product.

Chapter 2   Installation

2.1   Unpacking

2.1.1   Packaging contents

When you receive our Qmini BVQ-1100 real-time PCR instrument, please check that it includes the following items.

1.	Qmini BVQ-1100 real-time PCR		1
2.	Pipette	100-1000 ul	1
3.	Pipette	2-20 ul	1
4.	Pipette tip	1 ml	1
5.	Pipette tip	200 ul	1
6.	USB flash drive		1
7.	User guide (simple version)		1
8.	User manual		1
9.	Power cord	International standard, 1.5 meter, black	1
10.	Universal adapter		1
11.	Certificate		1
12.	List of product contents		1

2.1.2   Unpacking guidelines

This product is transported with well-designed carton packaging. The periphery and corners of the instrument are supported and fixed by the inner lining protective foam to prevent collision and vibration during transportation, as shown in Figure 2.
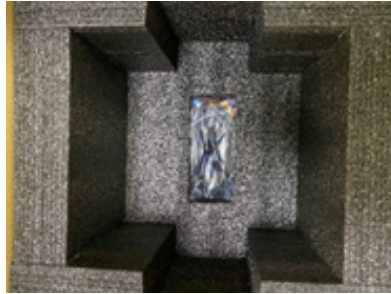
▲ Fig. 2 Packing lining

2.2   Environment

This instrument should be used and kept in an indoor environment.

2.2.1   Operating environment

1. Temperature: 10°C - 35°C

2. Relative humidity: 10% - 90%

3. Keep the instrument on a flat, stable, and dry surface.

4. The instrument should be operated at an altitude of below 2000 meters.

5. Do not place the instrument in a humid or dusty place. The room should be well ventilated and free from corrosive gas or strong magnetic field interference.

6. Do not cover or block the vents in the instrument to prevent it from overheating. The space between the vents of the instrument and the surrounding objects should be at least 30 cm.

7. High temperatures can affect the performance of the instrument. This instrument should avoid direct sunlight and strong light sources. Keep away from heaters, stoves, and other heat sources.

2.3   External connection

Power requirement: This instrument uses a power switch. The operating voltage is 110V/220V, and the frequency is 50/60HZ. Power line is a single phase 3-wire system and should be reliably grounded.

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⚠️   Warning：   Electricity needs to be grounded to help safeguard the instrument from any broken circuits!

_____

2.4   Installation

1. The operating environment of the instrument should meet the environmental requirements of 2.2.1 Keep the instrument on a flat, stable, and dry surface.

2. Please use the power cord provided with the instrument. When connecting, set the power switch to the OFF position.

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⚠️   ● If the power cord is broken, it must be replaced.

● Replacement must be replaced with a power cord of the same type and size.

_____

Chapter 3 Getting started

3.1 Inspection before starting up

Before turning on the power, check the following：

1）The power supply meets the system requirements.

2）Make sure the power cord is correctly inserted into the power outlet

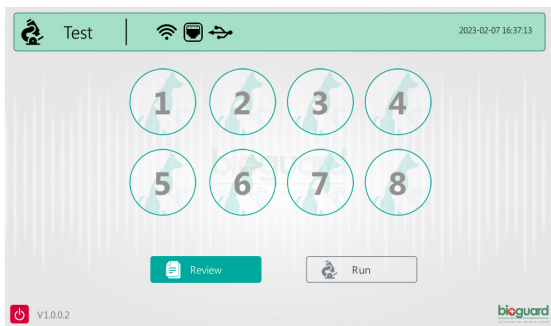3）The operating environment of the instrument meets the requirements.

3.2 Starting the instrument

Connect the power cord to the instrument, plug it into a power outlet, and set the power switch to "-". The following display will appear (Fig 4), and the device will do self-testing.

▲ Fig. 4 Bioguard's Logo on the screen

Then the main interface appears, as shown in Fig 5.

▲ Fig. 5 Main interface

Chapter 4　Software

4.1　Introduction

　　The software can help users not only set up and run the tests, but also collect and analyze data. In addition, users can check real-time amplification curve during the PCR amplification.

4.2　Function

Functions of software include:

1. Key in sample names

2. Select testing items

3. Run the test

4. Check the results

5. Check previous data

6. Set up system

4.2.1　Main interface

　　The main interface will display top bar, middle bar and bottom bar. The upper left corner of the top bar displays the name of the operation interface, and the upper right corner displays the time and date. The middle bar displays the specific operation functions; the bottom bar displays the power button on the left and the LOGO on the right, as shown in Figure 6.
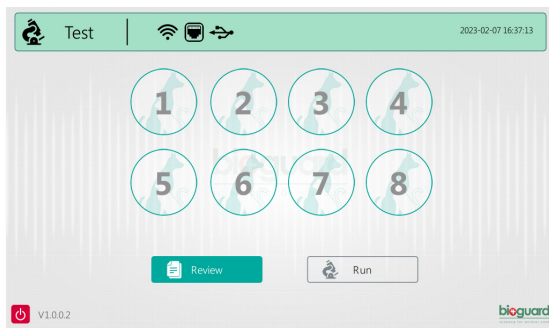

▲ Fig. 6 Main interface

4.2.2　Previous data

　　Click the"Review", and enter the previous data interface, as shown in Fig 7. Click "Return" to return to the main interface.

▲ Fig. 7 Previous data interface

4.2.3　Management System

　　Press the LOGO icon " bioguard " in the lower right corner of main interface for 5 seconds to enter the setting interface. In the management system, you can check device information. Adjust date and time. Select different language. Adjust screen brightness. Import and export data. Set printers. Set IP addresses and enter the maintenance or service interface. Click "Return" to return to the main interface.
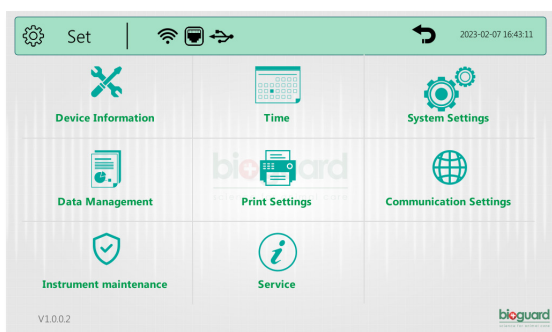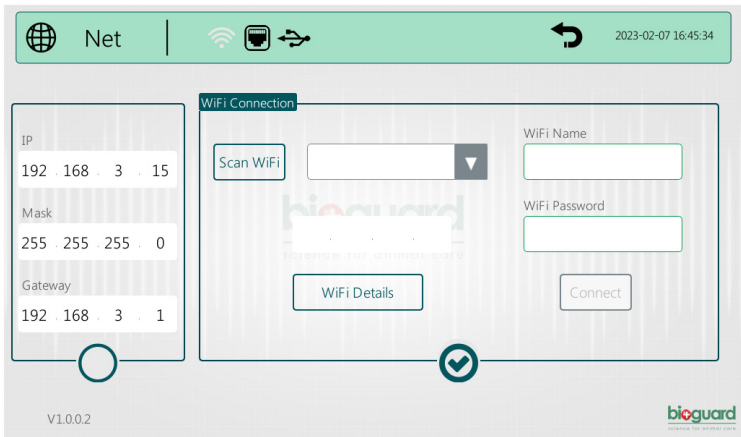

▲ Fig. 8 Setting interface

4.3 Instrument Settings

4.3.1 WiFi settings

After entering the setting interface shown in Fig 8, click "Communication Settings ", and enter the network interface shown in Fig 9. Click "Scan WiFi " and enter the interface shown in Fig 10. Click the drop down arrow and select the WiFi as shown in Fig 11. Enter the WiFi password (Fig 12), and click "connect". When the WiFi is connected, the WiFi logo will appear on the right side of the top frame (Fig 13). If the WiFi is not connected, please check if the password is correct, or place the instrument near the WiFi, and then try to connect again.
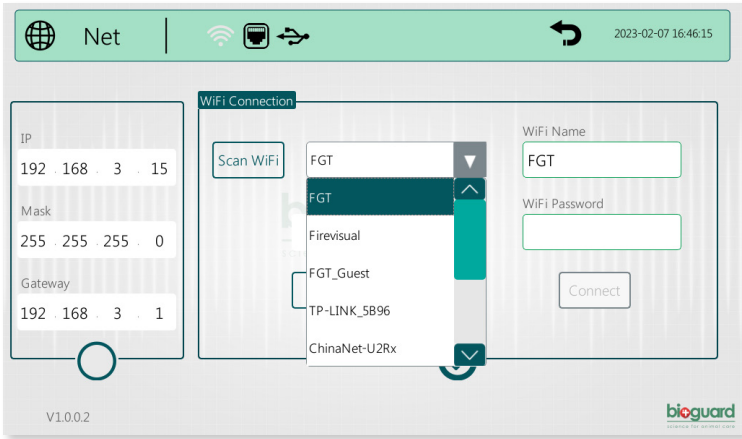
After connecting to WiFi, you can click "WiFi Details" to get the WiFi IP address (Fig 14). Please check Chapter 5 for more detailed information regarding the software.
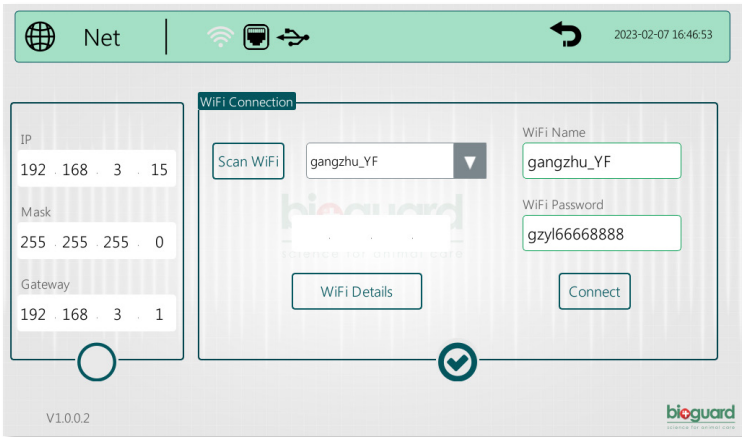

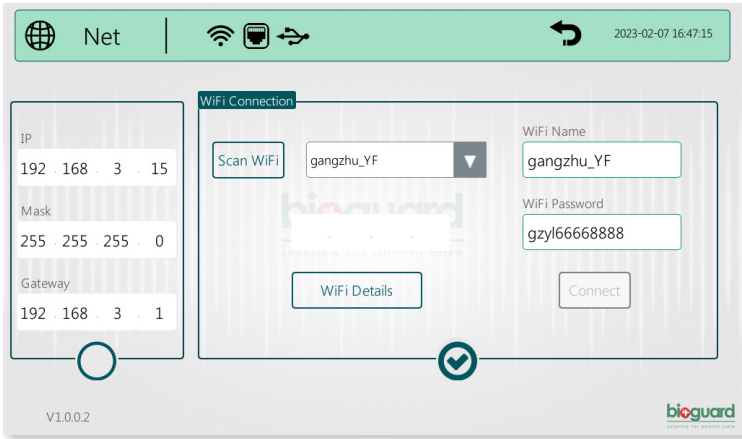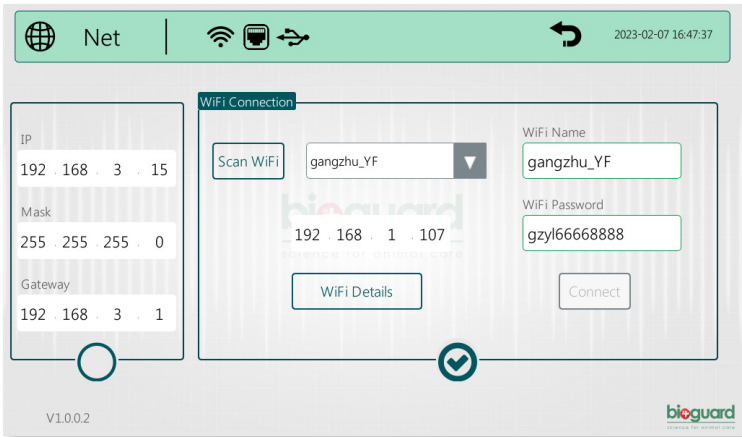▲ Fig. 9 Network interface
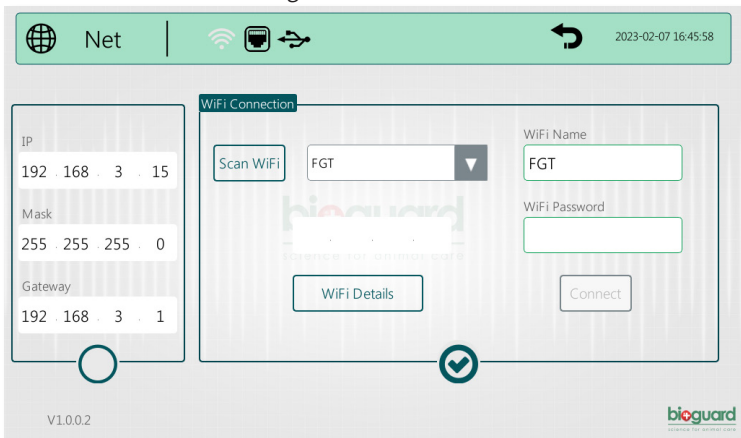
▲ Fig. 10 Scan WiFi

▲ Fig. 11 Searching WiFi

▲ Fig. 12 Enter WiFi password

▲ Fig. 13 Connect WiFi

▲ Fig. 14 Getting WiFi IP

4.3.2 Date and time settings

Click time icon as shown in Fig 8, and enter the date and time setting interface shown in Fig 15. Enter the current date. There are 8 different date formats for selection as shown in Fig 16. You can also enter the current time. When the settings is completed, click "Return", and a message box will pop up for confirmation of new settings, as shown in Fig 17. When confirming modification, please click "Yes". If you do not want to keep the settings, click "No". The date and time are modified from the factory time 2022-11-10 13:46:56 to the current time 2023-02-10 12:00:00 as shown in Fig 18.
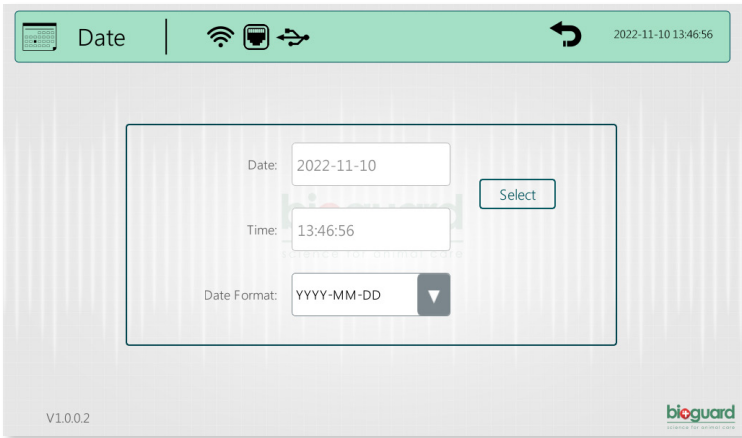
▲ Fig. 15 Date and time settings
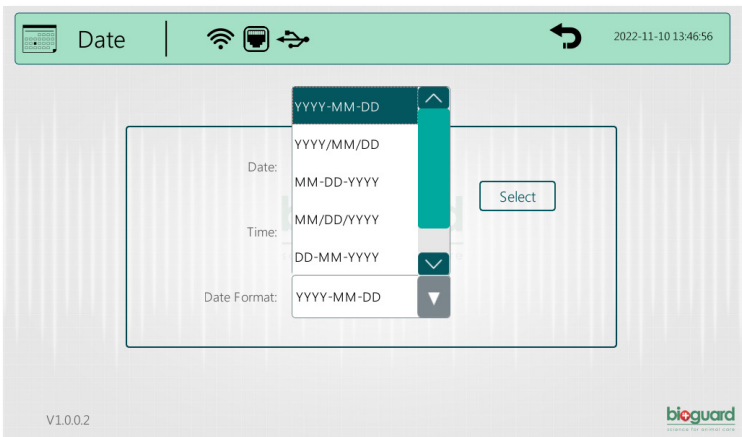
▲ Fig. 16 Select date formats
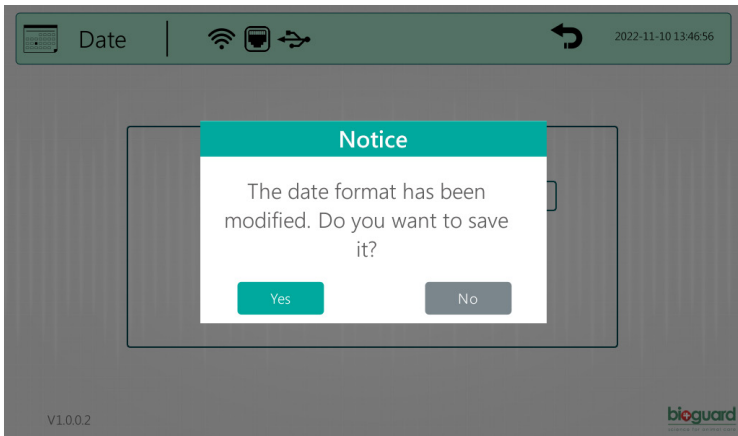
▲ Fig. 17 Saving date and time

▲ Fig. 18 Modified date and time

4.4   Test

This section introduces the Qmini BVQ-1100 real-time PCR software and how to complete a PCR test, including sample information settings, data collection, and data management.

4.4.1 Setting the sample name and test items

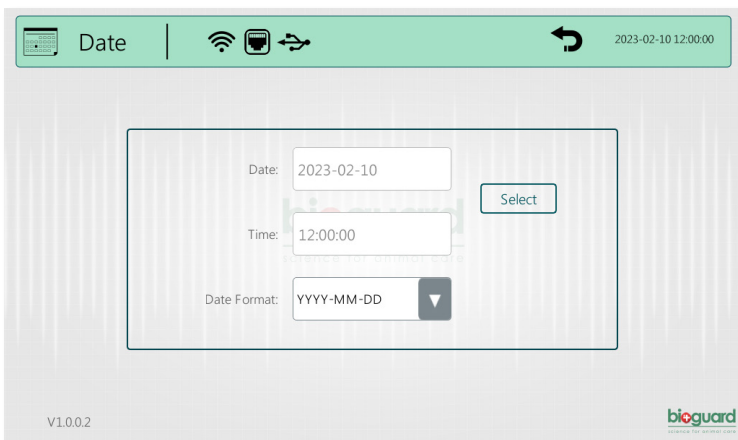Turn on the machine and enter the main interface shown in Fig 19, press the "OPEN" button of the instrument to open the lid, put the samples into the sample wells shown in Fig 1, and then click the sample to select the corresponding well in the main interface of the instrument (For example, if sample 1 is placed in the No. 1 well of the instrument, click the No. 1 position button on the main interface), and you will enter the sample editing interface shown in Fig 20.
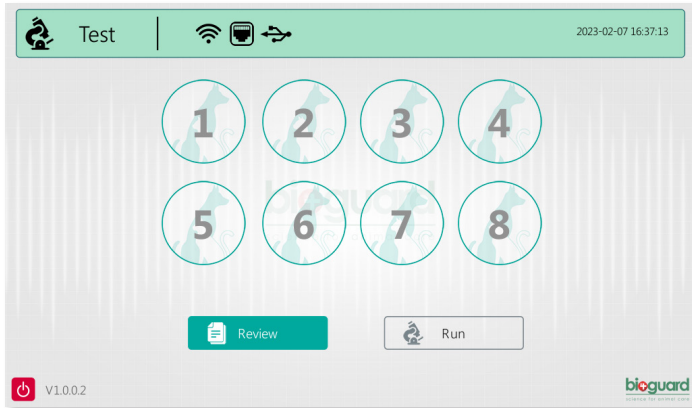
▲ Fig. 19 Main interface

First, select the species of pet (cat, dog, or exotics). After entering the corresponding interface, click to select the corresponding test item, such as coronavirus (Fig 20).
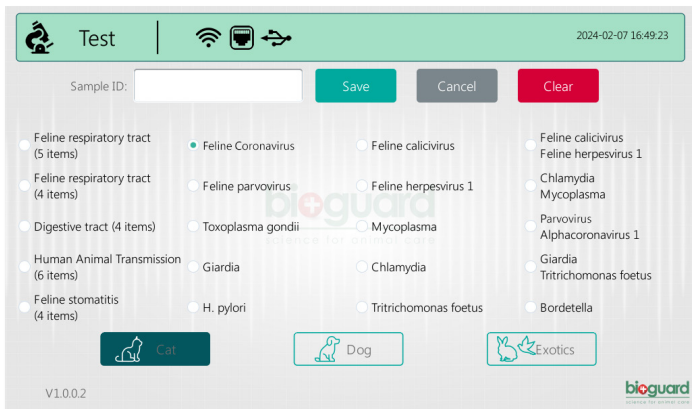
▲ Fig. 20 Sample editing interface

Then enter the sample ID. For example, we placed the sample of "mxr" in sample well 1, and correspondingly, we enter "mxr" into the sample ID input box (Fig 21)
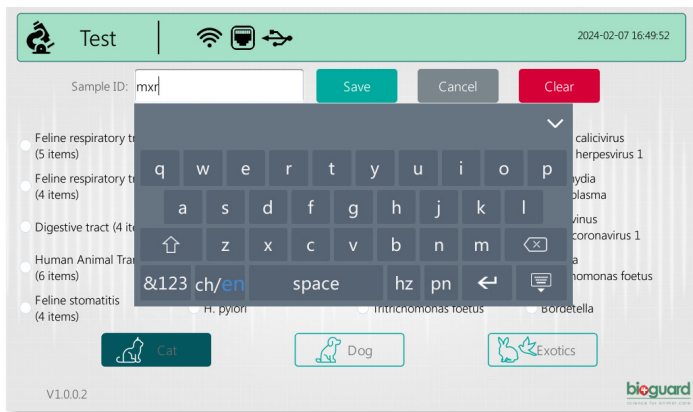
▲ Fig. 21 Entering sample ID

After entering the sample ID and testing items, click the "Save" button to return to the main interface. At this time, the main interface will display the information entered in the previous step.
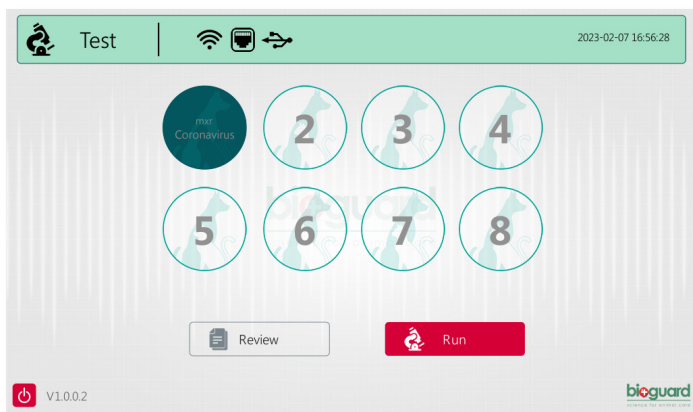
▲ Fig 22 Main interface after entering information of sample

Repeat the above steps, and enter other sample information. Up to 8 sample information (8 sample wells) can be entered at the same time, as shown in Fig 23.
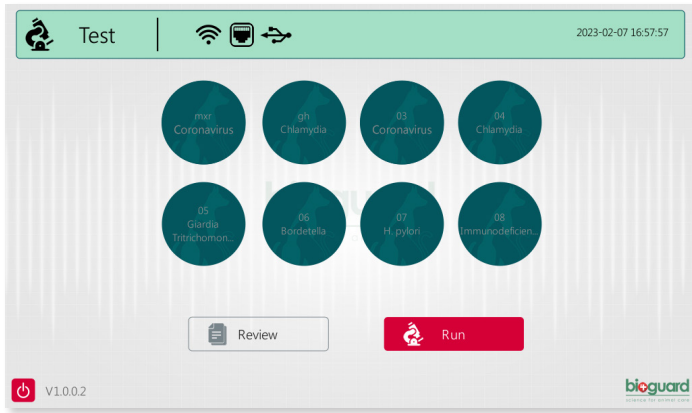
▲ Fig. 23 Main interface after entering 8 sample information

4.4.2 Testing

After setting the sample information, click "Run" to start the test, as shown in Fig 24.

The middle part of the functional area displays the amplification curve of real-time PCR, the position of the sample well, and the operating temperature of the instrument respectively. The lower part of the functional area displays the sample well position button, the result viewing button, the countdown timer, and the stop button.
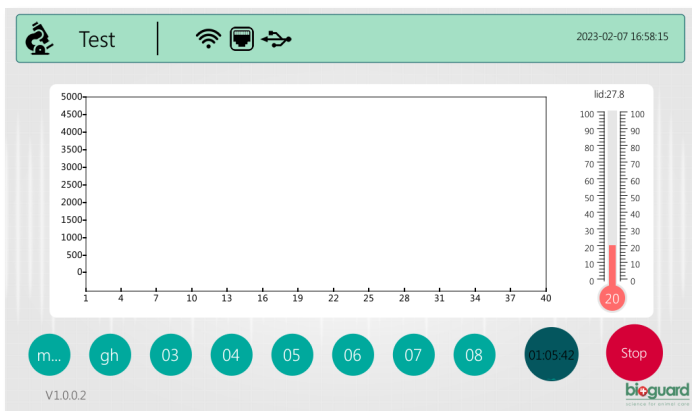
▲ Fig. 24 Instrument running status 1

Click the thermometer area to display the current testing information, as shown in Figure 24, this area displays the amplification curve with indicated color, testing items, and sample well location information. Click the sample well button in the lower part of the selection function area to display the corresponding real time information of the selected sample well.

If the sample information is collected for the sample well, the button of the sample well is selected by default, and the display is blue-green. After the selection is canceled, the color of the button is green, as shown in Figure 25.

If no sample information is collected, the color of the button is white, and the button cannot be selected at this time.
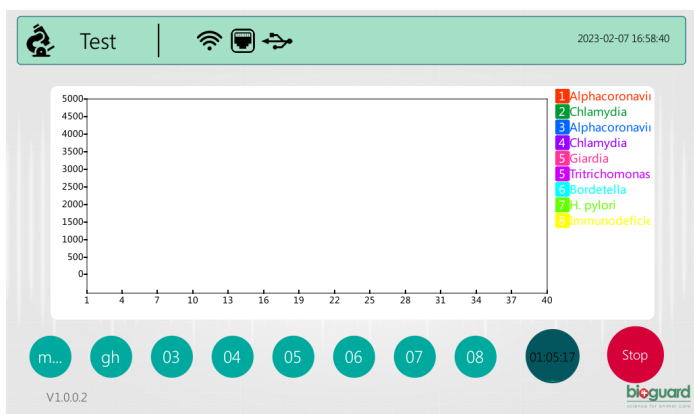
▲ Fig. 25 Instrument running status 2

If you want to terminate the testing before it is completed, please click "Stop". Then, a notice box, "Do you want to stop the test?", will pop up on the interface. Select "Yes" to stop the test, or select "No" to continue the test, as shown in Fig 26.
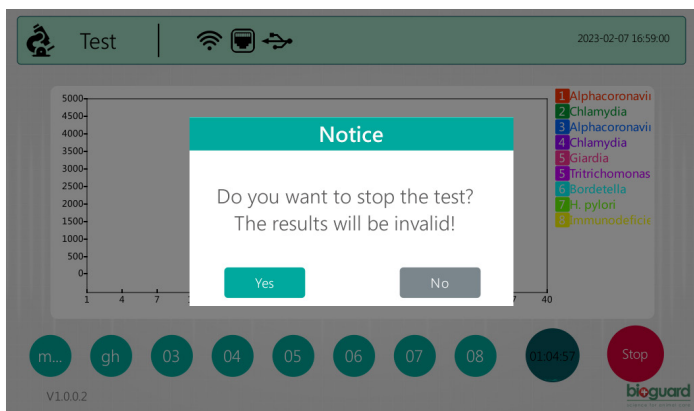
▲ Fig. 26 Stop the test

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4.4.3 Checking real-time testing results

After the testing is completed, it will display the data processed by the software. Click "View Results" to check the results of selected sample well, as shown in Fig 27.
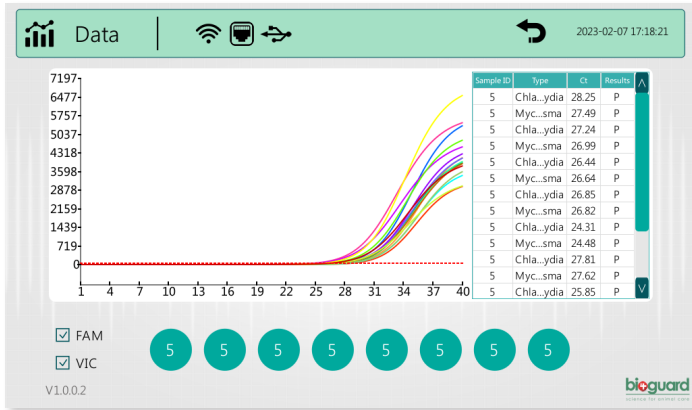
▲ Fig. 27 Results of real time PCR。

When the testing is completed, click "Return". Then, it will go back to main interface.

4.5   Previous Data

4.5.1   Checking previous data

In the main interface, if no sample information is entered, "Review" will be selected, as shown in Fig 28.

▲ Fig. 28 Main interface

Click "Review" to enter the previous data interface. At this time, the function bar displays previous data, page up and down buttons, and the bottom bar displays the "Query" and "Curve" buttons, as well as the current page number and the total page number. The curve button cannot be selected if no sample is selected, as shown in Fig 29.

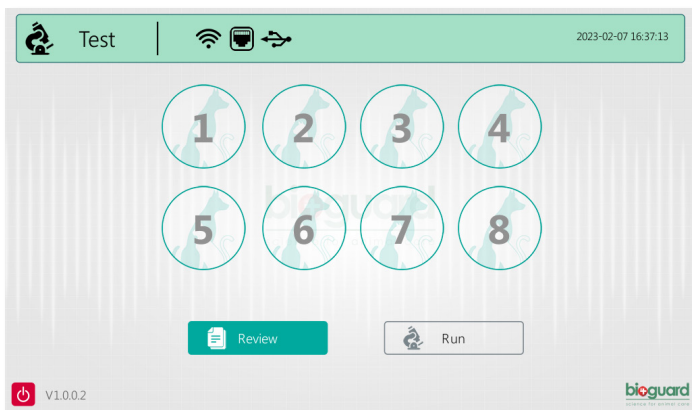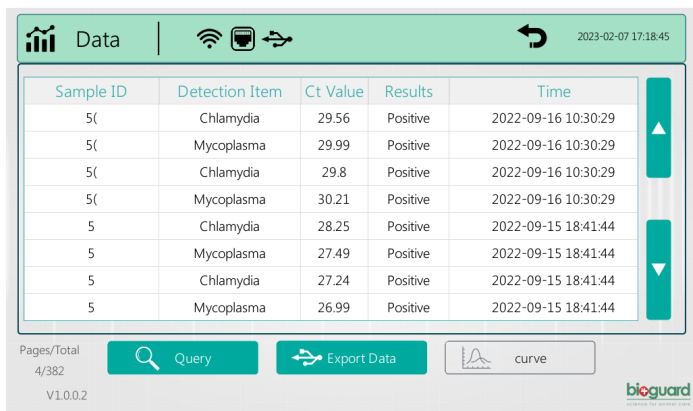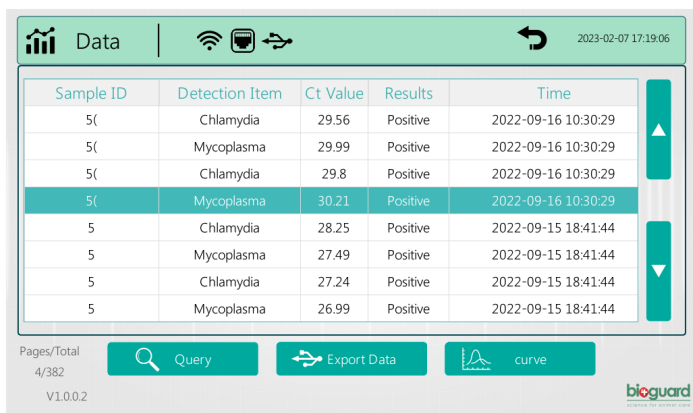| Sample ID	Detection Item	Ct Value	Results	Time
5(	Chlamydia	29.56	Positive	2022-09-16 10:30:29
5(	Mycoplasma	29.99	Positive	2022-09-16 10:30:29
5(	Chlamydia	29.8	Positive	2022-09-16 10:30:29
5(	Mycoplasma	30.21	Positive	2022-09-16 10:30:29
5	Chlamydia	28.25	Positive	2022-09-15 18:41:44
5	Mycoplasma	27.49	Positive	2022-09-15 18:41:44
5	Chlamydia	27.24	Positive	2022-09-15 18:41:44
5	Mycoplasma	26.99	Positive	2022-09-15 18:41:44

Pages/Total 4/382   Query   Export Data   curve   V1.0.0.2

▲ Fig 29 Previous data interface

After selecting the item for checking, the selected sample is marked with blue-green color. The " curve " button can be selected at this time, as shown in Fig 30.

Sample ID	Detection Item	Ct Value	Results	Time
5(	Chlamydia	29.56	Positive	2022-09-16 10:30:29
5(	Mycoplasma	29.99	Positive	2022-09-16 10:30:29
5(	Chlamydia	29.8	Positive	2022-09-16 10:30:29
5(	Mycoplasma	30.21	Positive	2022-09-16 10:30:29
5	Chlamydia	28.25	Positive	2022-09-15 18:41:44
5	Mycoplasma	27.49	Positive	2022-09-15 18:41:44
5	Chlamydia	27.24	Positive	2022-09-15 18:41:44
5	Mycoplasma	26.99	Positive	2022-09-15 18:41:44

Pages/Total 4/382   Query   Export Data   curve   V1.0.0.2

▲ Fig. 30 Select the item for checking

4.5.2 Amplification curve

Click " [curve] " button, and then enter amplification curve interface. The interface will display all the amplification curves of the test where the selected row is located, and the middle function bar displays the amplification curve and sample detection information, where the sample detection information includes "Sample ID", "Type", "Ct", and "Results".

The amplification curve and sample detection information of selected sample well can be displayed via selecting the number of sample well " ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ", as shown in Figs 31 and 32. "FAM" and "VIC" checkboxes can distinguish results of dual detection.
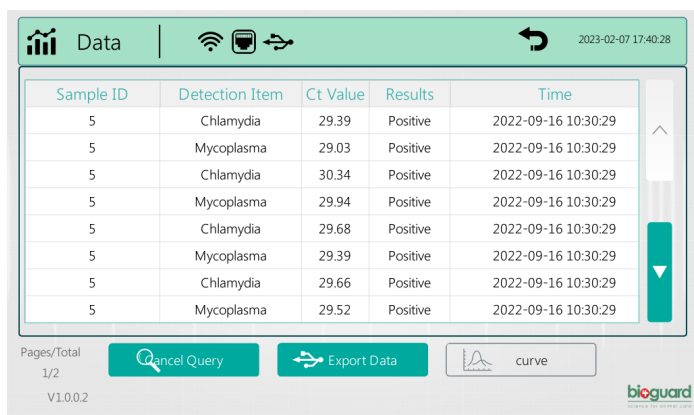

▲ Fig. 31 Amplification curve

▲ Fig. 32 Amplification curve of selected sample wells

4.5.3 Checking

In the previous data interface, click the query to enter query interface. Data can be searched based on different query. As shown in Figs 33 and 34, search the required data by entering the measuring date or sample ID
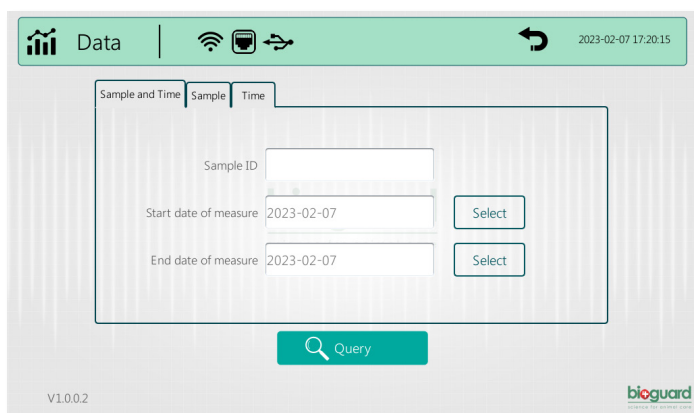
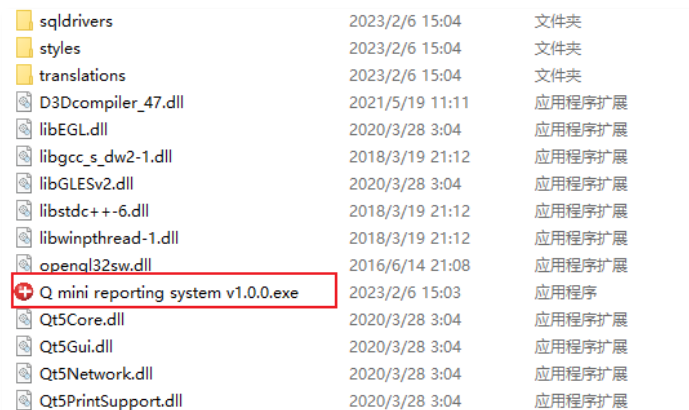
▲ Fig. 33 Query interface

▲ Fig. 34 Results of query

Chapter 5 PC Software

5.1 Software Installation

Find the USB flash drive in the accessory of the instrument. Insert the USB flash drive into the computer with Windows system, open the USB flash drive (Fig 35), copy the compressed package of "Qmini reporting system (use

directly after decompression).7z" to the computer, and decompress it.

Open the decompressed folder, click the application "Qmini reporting system" to enter the PC software interface.

|		
sqldrivers	2023/2/6 15:04	文件夹
styles	2023/2/6 15:04	文件夹
translations	2023/2/6 15:04	文件夹
D3Dcompiler_47.dll	2021/5/19 11:11	应用程序扩展
libEGL.dll	2020/3/28 3:04	应用程序扩展
libgcc_s_dw2-1.dll	2018/3/19 21:12	应用程序扩展
libGLESv2.dll	2020/3/28 3:04	应用程序扩展
libstdc++-6.dll	2018/3/19 21:12	应用程序扩展
libwinpthread-1.dll	2018/3/19 21:12	应用程序扩展
opengl32sw.dll	2016/6/14 21:08	应用程序扩展
Q mini reporting system v1.0.0.exe	2023/2/6 15:03	应用程序
Qt5Core.dll	2020/3/28 3:04	应用程序扩展
Qt5Gui.dll	2020/3/28 3:04	应用程序扩展
Qt5Network.dll	2020/3/28 3:04	应用程序扩展
Qt5PrintSupport.dll	2020/3/28 3:04	应用程序扩展

▲ Fig. 35 PC software folder

The PC software is divided into top bar, middle bar, and bottom bar. The top bar shows the software name and version number. The middle part displays software navigation and specific information, and the bottom part displays the instrument connection status. The left navigation in the middle part has system settings and data management, which can set up the connection between PC and instrument, update instrument data, display the operating status of the instrument in real time, and view previous data, etc. When the PCR instrument is not connected, the indicator icon in the bottom bar is red (Fig 36).
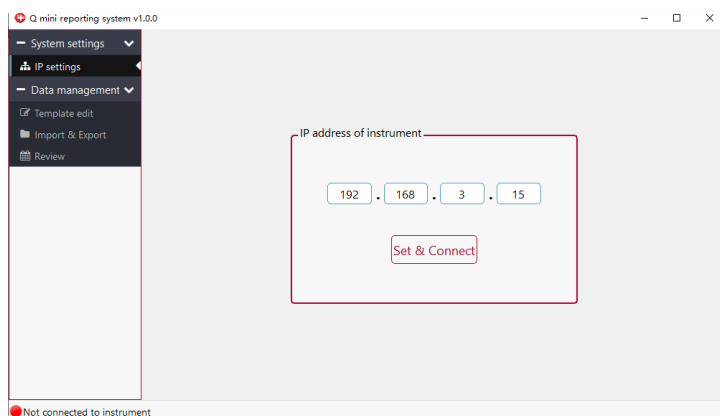
▲ Fig. 36 PC software interface

5.2　Connecting the instrument

Make sure that the PCR instrument is turned on, and then obtain the WiFi IP address of the instrument according to step 4.3.1. Click "Set & Connect" on the PC side to enter the interface shown in Fig 37, and enter the WiFi IP address of the instrument in the IP address box (the input in Fig 37 is 192.168.3.15). Click Connect, and then the indicator icon on the bottom turns blue-green. It means that the instrument is connected, as shown in Fig 37. If the connection is abnormal, please close the software. Check if the WiFi environment communicates normally, check if the instrument is connected well, and repeat the operation steps according to the steps in 5.1.
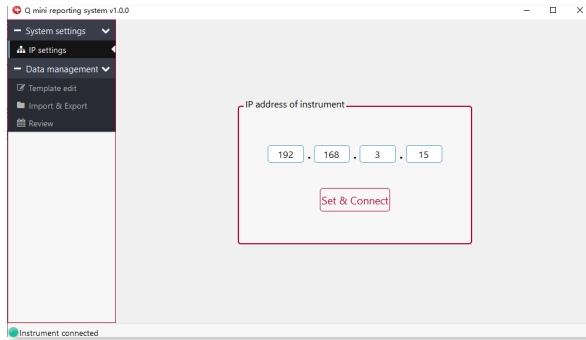
▲ Fig. 37 Instrument connection

5.3　Data update

Update the testing data of the instrument to the PC: click "Data management" to enter the previous data interface (Fig 38). Click the "Update data" button, and the progress bar will display the progress of updating. When "100%" is displayed, it means that the data update is completed. If the update is slow, please move the instrument to an environment with a stronger WiFi signal.
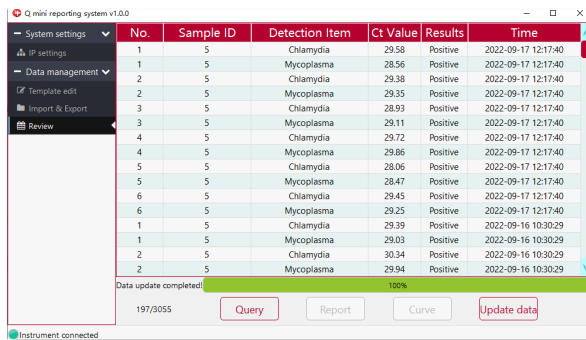
▲ Fig. 38 Data update

| ❗ | Notice： | Stronger signal strength is correlated with higher data transfer speeds. |

5.4　Previous data

Click "Data management" to enter previous data interface. Select the item for checking, as shown in Fig 39.

▲ Fig. 39 Previous data

5.4.1　Test Report

Test report provides:

1. Export PDF reports

2. Print reports

Select the item and click "Report" to enter the report interface (Fig 40). The information editing section is on the left, and the report preview section is on the right. After editing the information, click "Print" to enter the preview interface shown in Fig 41. Then, click the "　🖨　" button to complete the printing.
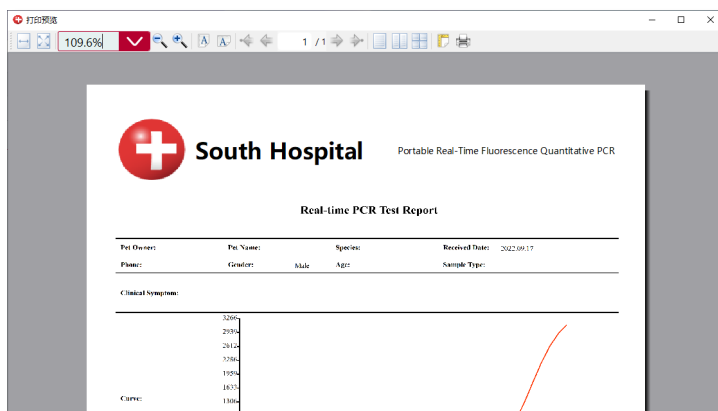

▲ Fig. 40 Report interface
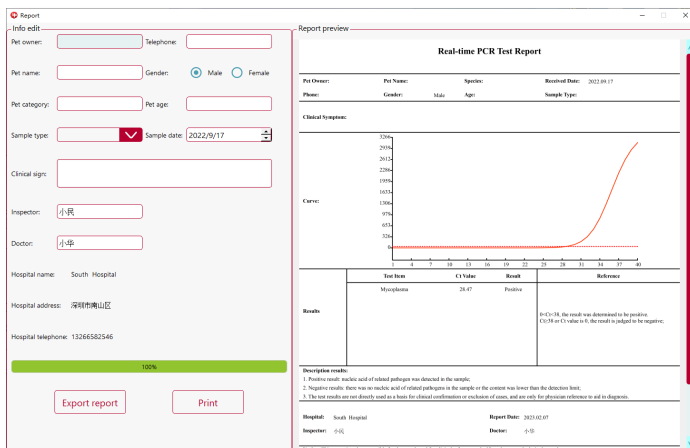
▲ Fig 41 Report preview

⬤ **Notice:** Make sure the computer is connected to the printer.

To export the report, select the folder to be stored in the storage path section, click "Export Report", and the PDF file of testing report will be generated in the corresponding location (Fig 42).


▲ Fig. 42 Export PDF reports

5.4.2　Checking the amplification curve

Click "[Curve]" in the main interface to enter amplification curve interface. The amplification curve and sample detection information of selected sample well can be displayed via selecting the number of sample well " ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ " "FAM" and "VIC" checkboxes can distinguish results of dual detection shown in Figs 43 and 44.
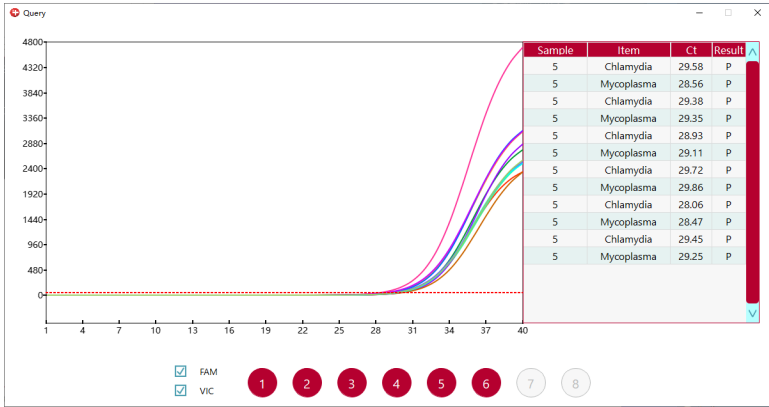
▲ Fig. 43 Amplification curve 1
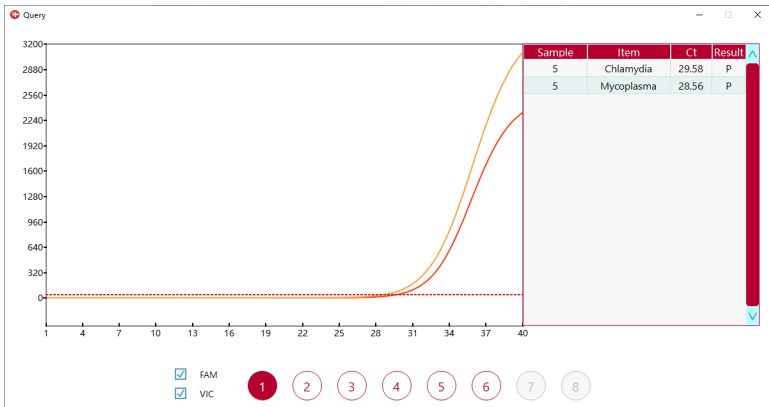
▲ Fig. 44 Amplification curve 2

Chapter 6 Cleaning and Maintenance

6.1 Cleaning

6.1.1 Instrument surface cleaning

The surface of the instrument should be cleaned regularly using a slightly moist soft cloth with water, and the instrument should be wiped dry after cleaning.

6.1.2 Sample well cleaning

1. If the sample well is contaminated with dust or impurities, it will affect PCR amplification and fluorescence detection. Therefore, it should be cleaned regularly, usually once every three months, and can be gently blown with a blower.

2. In order to prevent dust from entering the sample well, the lid should be closed when the instrument is not in use.

3. If any reagent enters the sample well, wipe it clean using a dust-free soft cloth with 70% alcohol.

_____

⚠ Notice：

Switch off and unplug the instrument before cleaning.

Do not pour liquids into the reaction module or inside the instrument. Do not scrub the instrument with strong corrosive or organic solvents.

_____

6.2 Maintenance

1. Do not switch the instrument on and off frequently.

2. Do not turn off the power immediately after testing, keep it in standby mode for 10 minutes (the internal fan of the instrument is still workingcontinuously during this period). Turn off the power after the module temperature drops to room temperature.

3. Please use the power cord provided by the manufacturer.

4. Do not use hot water bath or low temperature insulation (such as 4° C) on the instrument.

5. Do not disassemble the instrument. If any problem occurs please contact your local distributor.

Chapter 7　Troubleshooting

7.1　Troubleshooting Guides

No.	Problem	Possible causes	Solution
1.	After booting, the status LED is normal, but the screen is black	Abnormal connection	Check if the circuit is stable, if the voltage is normal, and if the power interface is tightly plugged in
2.	Touch screen is unresponsive.	Faulty screen or poor cable contact	Contact maintenance personnel.
3.	Fan does not work	Internal cable problem or fan failure	Shut down the instrument, and contact maintenance personnel.
4.	There is no response when the USB flash drive is inserted into the USB port.	The format of USB flash drive is not compatible.	Check if the format of USB flash drive is FAT32.
5.	Wi-Fi network is not detected	The wireless frequency of the WiFi network does not match	Check if the network is 2.4G WiFi network
6.	Network error, please check the network	The device is not connected to the Internet, or the connected network signal is unstable, or the router is faulty	Check the network environment
7.	When uploading data, it prompts "unknown error".	The device is not connected to the Internet, or the connected network signal is unstable, or the router is faulty	Check the network environment
8.	Heating abnormal fault prompt	Abnormal heating	Contact maintenance personnel
9.	Fault prompt for abnormal temperature drop of the instrument	Abnormal cooling of the instrument	Contact maintenance personnel
10.	Heating lid sensor abnormal fault prompt	Abnormal heating lid sensor	Contact maintenance personnel
11.	Abnormal fault prompt of the heat sink sensor	Abnormal heat sink sensor	Contact maintenance personnel
12.	Heat sink over temperature fault prompt	Abnormal heat sink	Contact maintenance personnel

Chapter 8 Technical support

Bioguard guarantees that the Qmini BVQ-1100 real-time PCR analyzer has passed a comprehensive test and meets the requirements in the instruction manual.

The use of this instrument must comply with the instructions and safety warnings given in this user manual, otherwise it will not be covered by the guarantee.

Software: Any software related to this product is provided to customers free of charge as a service, and the software is a necessary tool to run the instrument.

Responsibility: Bioguard is not responsible for direct, indirect, or incidental damage caused by failure to comply with the instructions given in the user manual or incorrect use of the Qmini BVQ-1100 real-time PCR instrument. Only our technicians or their agencies can inspect or provide any parts of the instrument. Bioguard is not responsible for any direct, indirect or incidental damage caused by the user's random disassembly and replacement of parts.

The testing results are for in vitro veterinary diagnosis only, and cannot be used as the full or direct basis for decision-making on clinical medication, surgery, and prognosis. The veterinarian should combine the judgment of the clinical symptoms of the pet with other diagnostic results.

Factors may affect the results during PCR testing include:

Environmental factors such as aerosol pollution of the previous testing items, unstable voltage, etc. Human operation factors such as extraction errors, failure to strictly follow the requirements of the instruction manual, etc.

Equipment factors such as vibration, improper use, etc.

Kit storage factors such as high temperature, high humidity, strong direct light, unqualified reagent quality, etc.

Test results may appear false negative, or false positive, or inconsistent with clinical symptoms due to the factors mentioned above. The test results are for in vitro veterinary diagnosis only. Please consult all other clinical symptoms and use other diagnostic methods, to ensure an accurate diagnosis.

Before using the Qmini BVQ-1100 real-time PCR analyzer, please read this manual carefully to ensure that you can get the best testing results.
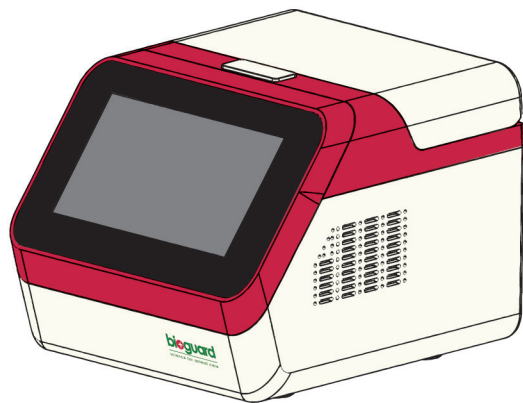
If you have any questions regarding the testing process, please contact our technical support.

bioguard™

science for animal care

Qmini BVQ-1100 即時螢光 PCR 儀

使用說明書

百衛生物科技有限公司
Bioguard Corporation

產品資訊

規格型號：BVQ-1100

產品名稱：BVQ-1100 即時螢光 PCR 儀

版本資訊

本使用說明書可能會因軟體升級而升級，恕不另行通知。

版本號：1.0

發行時間： 2023 年 2 月

標準符合

本產品製造商的品質管制體系符合國際標準 ISO 13485。

設備符號

產品及其包裝上有以下符號標記。

產品符號	說明	產品符號	說明
	遠離火源		保持乾燥
	此面向上		小心輕放
	易碎物品		遠離陽光

產品支援和維護

保固

本產品保固一年。請保留好包裝箱以便運輸、貯存或需要退回本公司維修時使用。

本公司在下列條件下認為應對本產品的安全、可靠性及性能負責：

◆ 由本公司授權的人員對本產品進行裝機、升級、改進或維修

◆ 本產品所在環境的電氣動力設施符合國家標準

◆ 按照本使用說明書來使用本產品

下列情況下造成產品損壞，不屬於本公司免費保修範圍：

◆ 由於下列原因造成產品損壞

● 操作不當

● 與其它設備連接不當

● 意外事故

◆ 無本公司書面授權條件下，使用者擅自對產品進行更改

◆ 產品序列編號被撕下或無法辨認

售後服務

當您需要產品技術支援時，請與代理商和經銷商聯繫，或聯繫本公司客服部門。

您在獲取售後支援之前，請先查詢記錄以下資訊：

◆ 故障現象

◆ 產品型號和序號

安全須知

安全術語

使用說明書中使用的術語「危險」、「警告」、「小心」、「注意」指出危害和按重要的程度提醒用戶在使用過程中應注意的問題。

危害是指對人體造成傷害的潛在原。

❗	注意	給使用者提供有用的資訊和提示，確保本產品能最大限度地發揮功用
⚠	小心	指如果不避免將會導致較小的人體傷害或產品損害的潛在危害或不安全行為。
⚠	警告	指如果不避免將會導致死亡或嚴重傷害的潛在危害或不安全行為。
⚠	危險	指如果不避免將會導致死亡或嚴重傷害的危害。

安全地使用即時螢光 PCR 儀

⚠	警告	請勿讓鏡頭或影像處理元件受潮，使用時應避開藥水的沾濺，以免引起故障。 切忌將儀器運行於溫度超過 35℃及以上溫度的環境。 該儀器擴增產物請按照《事業廢棄物貯存清除處理方法及設施標準》之生物醫療廢棄物處理辦法進行處置。 為了使該產品能更安全的使用，醫院必須提供具有標準保護接地的 110/220V、50/60Hz 的電源輸出插座。 在整個系統沒有全部關閉電源之前，嚴禁插拔電源線。
⚠	小心	未經廠家許可或書面授權條件下，使用者不得擅自對系統進行隨意拆卸、修改或使用不符合廠家規定的各種配件。 在對儀器清潔或消毒之前，必須先關閉儀器並拔掉系統總電源線。 請勿隨意拆卸儀器，以防觸電。 請按照本公司的要求對儀器進行清潔和消毒。 儀器的使用請遵循本使用說明書的使用方法，以保證本儀器的長期安全使用。 應由具有資格的專業人員定期對本儀器進行校準和維護保養。 如有疑問請與本公司總部或分公司聯繫。

禁忌症

暫無。

目 錄

目 錄

第 1 章　概述

本手冊提供了如何操作 Qmini BVQ-1100 即時螢光 PCR 儀的一般資訊和詳細的操作指引。 本章對硬體、軟體和技術支援資訊進行了概述性描述。

操作原則、應用程式和功能的簡單摘要：

Qmini BVQ-1100 即時螢光 PCR 儀是為滿足當今分子生物實驗室的需求所設計。高品質的光學零件、 可靠的溫度控制系統及嚴格的生產工藝確保儀器可靠性、精度和準確度。

儀器的主要功能包括多通道螢光 PCR 檢測及資料分析管理等。Qmini BVQ-1100 即時螢光 PCR 儀可以使用條形管或單個 PCR 管進行 PCR 反應。基於 LINUX 的作業系統，所有的儀器設置和分析功能，均由直觀的、易於使用的軟體介面控制，可進行快速實驗設置和資料分析。每個循環後，所有樣品的螢光強度與循環次數顯示不斷更新。實驗結束後報告可以使用公司配套 PC 軟體導入實驗資料後生成。

儀器可以針對寵物病原體進行即時螢光 PCR 檢測，檢測項目包括冠狀病毒 I 型、貓卡里西病毒、貓皰疹病毒 I 型、貓小病毒、犬瘟熱病毒、犬焦蟲等數十種貓犬病原體。儀器封閉的反應體系，可將污染降低到最小；儀器能夠對資料進行即時採集和分析，其高效的資料管理能力使用戶迅速生成資料和列印檢測報告。

1.1　產品適用範圍

本產品適用於寵物醫院以聚合酶鏈式反應為特徵的，以螢光定量檢測分析 DNA/RNA 為目的的病原體檢測。

1.2　使用目的

針對寵物病原體進行即時螢光 PCR 檢測。

1.3　產品特點

Qmini BVQ-1100 即時螢光 PCR 儀特點為多樣本快速檢測，結果準確，簡單易用。Qmini BVQ-1100 即時螢光 PCR 儀可以通過 WiFi 與 PC 端軟體連接，更易於資料的查看和報告的生成。

1.4 Qmini BVQ-1100 即時螢光 PCR 儀介紹

1.4.1 結構組成

本產品主要由加熱製冷系統、溫度監控系統、螢光檢測系統、散熱系統、LED 指示系統及電源線等組成，如圖 1 所示。
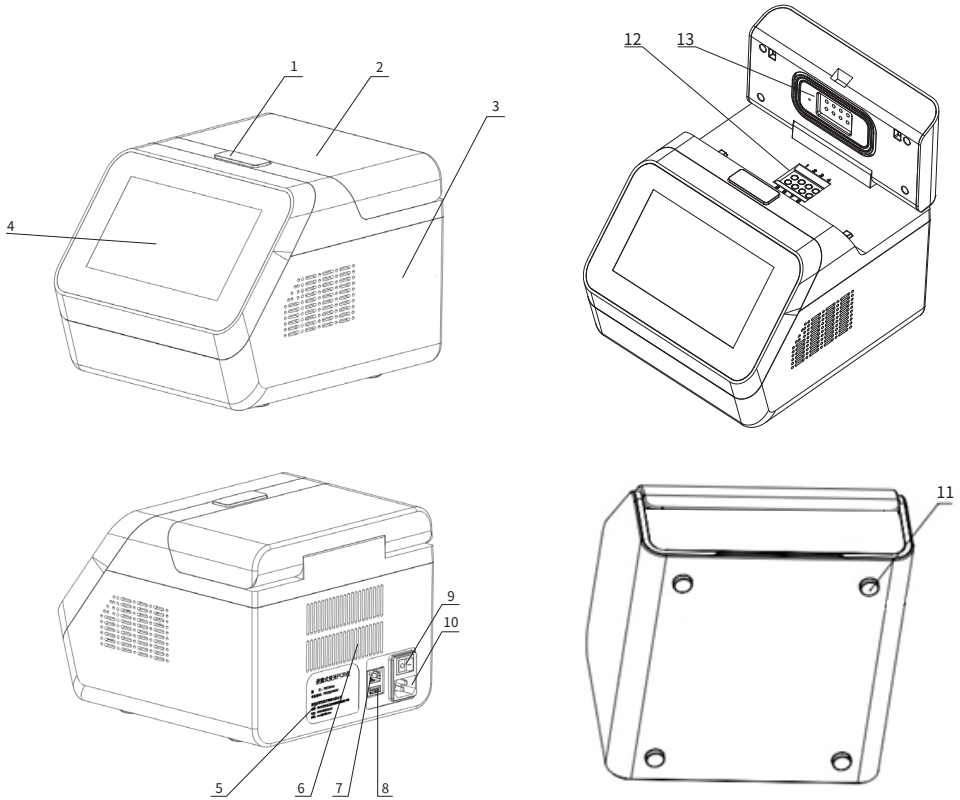
▲ 圖 1 Qmini BVQ-1100 即時螢光 PCR 儀組成

1. 開蓋按鈕	2. 儀器上蓋	3. 左側面板	4. 顯示螢幕
5. 銘牌標識	6. 出風口	7. 網路孔	8.USB 介面
9. 電源開關	10. 電源插頭孔	11. 儀器底腳	12. 樣本放置孔
13. 加熱蓋			

1.4.2 儀器參數及特性

1.4.2.1 儀器常規參數

儀器規格	
尺寸：	268*236*188 mm
重量：	4.5 kg

電源規格	
電源電壓：	AC 110V/220V
電源頻率：	50HZ-60HZ

通訊規格	
網路孔：	TCP/IP 協定，乙太網連接。

使用環境	
溫度：	10℃ -35℃
濕度：	10%-95%RH，無冷凝
大氣壓力：	標準大氣壓
海拔：	2000 米
儲運環境：	注意防潮、防摔
運行噪音：	50dB

1.4.2.2 儀器技術參數

熱學參數	
➢ 溫度準確性	±0.25℃
➢ 溫度均勻性	±0.25℃
➢ 控溫精確度	±0.1℃
➢ 升降溫速率	6℃ /S

光學參數	
➢FAM 檢測波長	520nm±10nm
➢VIC 檢測波長	570nm±10nm
➢FAM 螢光激發波長	495nm±10nm
➢VIC 螢光激發波長	535nm±10nm

人機交互系統參數	
➢ 觸摸螢幕：	儀器內置 7 寸全彩觸摸螢幕，可脫離電腦獨立運行。
➢USB 介面：	本儀器的 USB 介面僅用於連接 USB 隨身碟和條碼掃描器。
	禁止：本儀器的 USB 介面不可用於電子設備的充電使用。
	提示：連接 USB 隨身碟到本儀器前，請將 USB 隨身碟格式化為 FAT32 格式，並確認 USB 隨身碟中預留有足夠剩餘空間，建議預留 1G 空間。

1.5　拆箱安裝與運輸

　　開箱時注意機體不得倒置，取出主機及附件後，將包裝材料妥善保存，以備收回維修時使用。按照裝箱清單清點附件。

　　另外，您應當收到訂購的所有選用件與附件，如有遺失，請與您的代理商聯繫；如在運輸過程 中發生損壞現象，請保存包裝材料以備檢查，並立即與代理商聯繫。請您根據廠家提供的裝箱單，仔細檢查主機及配件是否相符；有無碰撞及破損等情況。

第 2 章　儀器安裝

2.1　儀器拆箱

2.1.1　裝箱內容確認

當您收到我司的 Qmini BVQ-1100 即時螢光 PCR 儀時，請開箱檢查是否包括以下內容：

1.	BVQ-1100 螢光定量 PCR 儀		1	台
2.	微量分注器	100-1000ul	1	支
3.	微量分注器	2-20ul	1	支
4.	微量吸管尖（含盒）	1ml	1	盒
5.	微量吸管尖（含盒）	200ul	1	盒
6.	USB 隨身碟		1	個
7.	快速操作指南		1	張
8.	使用說明書		1	本
9.	電源線	國標，1.5 米，黑色	1	條
10.	通用轉接頭		1	個
11.	合格證		1	個
12.	裝箱清單		1	張

2.1.2　儀器拆箱指南

　　本產品的運輸包裝為整機紙箱包裝。儀器四周及邊角處由內襯保護泡沫支撐、固定，以防止在 運輸過程中的碰撞、震盪，如圖 2 所示。
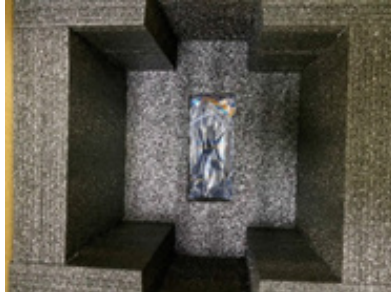
▲ 圖 2 包裝內襯圖

2.2　儀器安裝要求

　　本儀器僅適用於室內安裝、使用，且對室內的電源、通風等環境均有要求。

2.2.1　儀器使用環境

1. 環境溫度：10℃ - 35℃

2. 相對濕度：10% - 90%

3. 本儀器應在室內使用，放置儀器的工作臺應水平、穩固

4. 儀器要求在海拔 2000 米以下使用

5. 本儀器應安裝在濕度較低、灰塵較少並遠離水源（如水池、水管等）的地方，室內應通風良好，無腐蝕性氣體或強磁場干擾。請不要將儀器安裝在潮濕或灰塵較多的地方

6. 本儀器上的開口是為了通風而設，為了避免溫度過熱，務必不可阻塞或覆蓋這些通風孔。 儀器 四周的通風孔與最近物體的距離應不小於 30cm

7. 溫度過高會影響儀器的檢測性能或引起故障。不要在陽光和強光源直射的地方使用本儀器，以 免影響儀器螢光檢測，並遠離暖氣、爐火以及其他一切熱源

2.3 儀器外部連接

電源要求：本儀器採用開關電源，使用電壓 110-220V，頻率為 50/60HZ，電源線為單相三線，必須接地。

⚠️　　警告：　　儀器必須接地，以免造成觸電事故！

2.4 儀器的安裝

1. 儀器的安裝應符合 2.2.1 的環境要求，儀器放置的工作臺應平穩、水平，保證儀器的穩定。

2. 電源線安裝應使用儀器附帶的電源線。連接時，儀器電源開關應處於關的狀態。

⚠️
- 隨機附帶的電源線經過多次插拔後，可能會引起插接處過鬆，若出現此種現象，應該更換電源線。
- 電源線的更換應選用相同類型、相同規格的電源線。

第 3 章　儀器開機

3.1　開機前的檢查

在接通電源以前，應先確認以下內容：

1. 電源是否與系統要求相符；

2. 確認電源插頭已正確、可靠的插入電源插座中；

3. 周圍工作環境、儀器的放置條件是否符合要求。

3.2　開機

在儀器後部接上電源線，插入電源插座，並將電源開關置為「 - 」。儀器通電後，液晶螢幕點亮，顯示開機 LOGO，儀器進入自檢狀態，如圖 4 所示。

▲ 圖 4 開機啟動畫面

開機後進入主介面，如圖 5 所示。

▲ 圖 5 開機主介面

第 4 章 軟體功能介紹

4.1 軟體概述

Qmini BVQ-1100 即時螢光 PCR 儀軟體可用於設置實驗、 運行實驗、實驗資料收集、分析和管理。標準的 PCR 設置以及擴增過程中即時圖形查看等功能,可以讓用戶在實驗後輕鬆地重新分析實驗結果。

4.2 功能

軟體執行以下功能:

1. 樣本名設置

2. 檢測項目設置

3. 運行實驗

4. 查看結果

5. 歷史資料

6. 系統設置

4.2.1 主介面

主介面為實驗操作介面,它分為頂部欄、中部欄和底部欄。頂部欄左上角顯示操作介面名稱, 右上角顯示時間日期;中部欄顯示具體操作功能;底部欄左側顯示開關機按鈕,右側顯示 LOGO, 如圖 6 所示。

▲ 圖 6 主介面

4.2.2　歷史數據

　　在主介面中按一下「歷史記錄 」按鈕，進入到歷史資料介面，如圖 7 所示。單擊「返回」按鈕返回到主介面。

▲ 圖 7 歷史數據介面

4.2.3　後臺設置

　　在主介面中，長按右下角 LOGO 圖示「 bioguard 」5 秒，進入設置介面，如圖 8。後臺可以查看設備資訊、調整日期時間、切換語言、調整螢幕亮度、匯入和匯出資料、設置印表機、設置 ip 位址和進入廠商維護介面。按一下「返回」按鈕，返回到主介面。
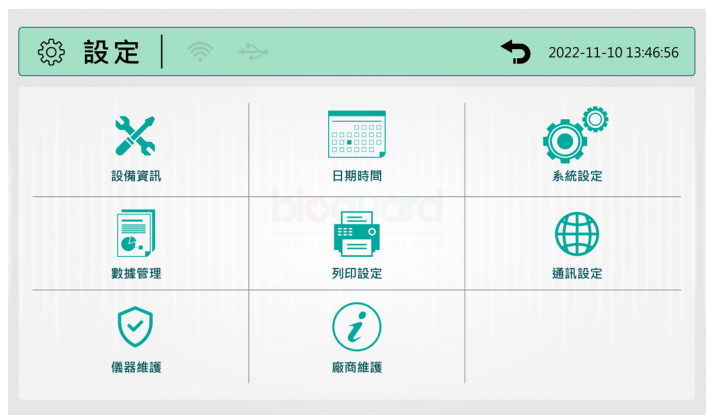
▲ 圖 8 設置介面

4.3 儀器設置

4.3.1 WiFi 設置

　　進入到圖 8 所示的設置介面，點擊「通訊設定」按鈕，進入到圖 9 所示介面。點擊「掃描 WiFi」按鈕，進入到圖 10 所示介面。點擊下拉清單箭頭，選擇所需的 WiFi，如圖 11 所示。在 WiFi 密碼框內輸入 WiFi 密碼（圖 12），點擊「連接WiFi」，當 WiFi 連接上時，頂部框右邊會出現 WiFi 標誌（圖 13）。如果未連接，請檢查 WiFi 密碼是否正確，或者將儀器 放置到距離 WiFi 比較近的地方嘗試。

　　當連接上 WiFi 後，可以通過點擊「獲取本地 WiFi IP」按鈕來獲取本台儀器的WiFi IP 地址（圖 14），用於與 PC 端軟體的網路通信，詳細內容請參考第 5 章介紹。

▲ 圖 9 WiFi 介面

▲ 圖 10 掃描附近 WiFi
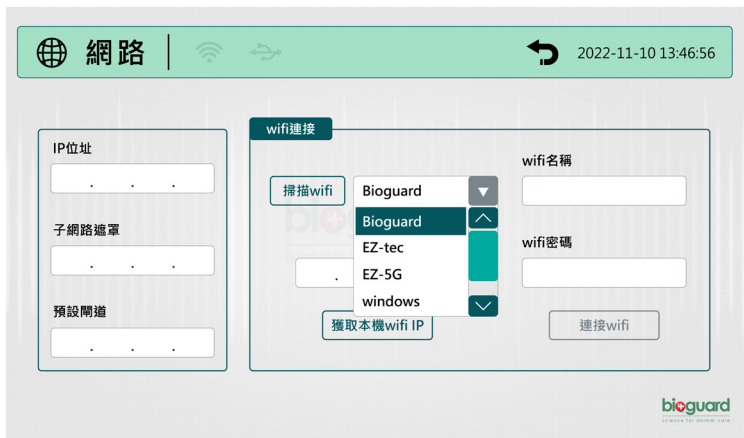
▲ 圖 11 尋找 WiFi

▲ 圖 12 輸入 WiFi 密碼

▲ 圖 13 連接 WiFi

▲ 圖 14 獲取 WiFi IP 地址

4.3.2 日期和時間設置

　　進入圖 8 所示的設置介面，點擊「日期時間」按鈕，進入到圖 15 所示的日期和時間設置 介面。在日期框裡面 ，我們可以輸入當前日期，在日期格式下拉框 內，我 們 可 以 選 擇「DD-MM-YYYY」、「MMDDYYYY」、「MM-DD-YYYY」、「YYYY/MM/DD」、「MM/DD/YYYY」、「DDMMYYYY」、「DD/MM/YYYY」、「YYYY-MM-DD」8 種格式，其中 YYYY 表示「年」，MM 表示「月」，DD 表示「日」，如圖 16 中我們選擇 YYYY-MM-DD，則日期顯示格式為 2023-02-10。在時間框內，我們可以輸入當前時間。當修改完畢後，點擊「返回 」按鈕，此時彈出是否保存訊息視窗（圖17）， 當確認修改的時候，請點擊「是 」按鈕，當不保存修改的時候，請點擊「否」按鈕，如圖 18 所示，日期時間由出廠時間 2022-11-10 13:46:56 修改為此刻時間2023-02-10 12:00:00。至此，時間日期修改完畢。

▲ 圖 15 日期和時間介面
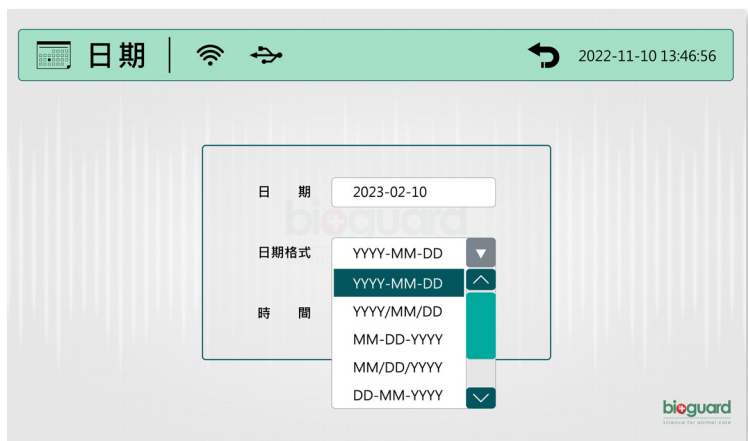
▲ 圖 16 選擇日期和時間格式

▲ 圖 17 保存日期和時間

▲ 圖 18 修改後的日期和時間

4.4 執行分析

本節將提供 Qmini BVQ-1100 即時螢光 PCR 儀軟體的快速瀏覽以及如何完成螢光 PCR 實驗，包括樣本資訊設置、採集資料和資料管理等。

4.4.1 設置樣本名和檢測專案

開機進入圖 19 所示的主介面，按下儀器「OPEN」按鈕打開頂蓋，將待檢測的樣本放入圖 1 所示的樣本孔位元，然後在儀器軟體主介面中點擊樣本放置相應的孔位元（比如樣本 1 放在儀器 1 號孔位，則點擊主介面 1 號位置按鈕），會進入到圖 20 所示的樣本編輯介面。

▲ 圖 19 主介面

首先選擇檢測的寵物種類（貓、犬或異寵），進入相應介面後，點擊選擇相應的檢測項目，如冠狀病毒（圖 20）。

▲ 圖 20 樣本編輯介面

接著輸入樣本 ID，如 1 號孔位置我們放置的是「貓星人」的樣本，對應的我們錄入「貓星人」到樣本 ID 輸入框（如圖 21）。
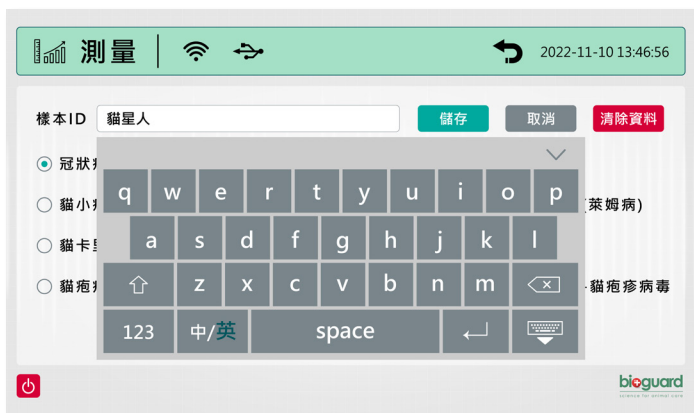
▲ 圖 21 輸入樣本 ID

錄入完樣本 ID 和檢測專案後，點擊「保存」按鈕，返回到主介面；此時主介面會顯示上一步錄輸入的資訊。

▲ 圖 22 輸入樣本後的介面

重複以上步驟，根據實際所做的樣本數量，依次輸入其他的樣本資訊，最多可以同時輸入 8 個樣本的資訊（即 8 個孔位），如圖 23 所示。

▲ 圖 23 輸入 8 個樣本資訊後的介面

4.4.2 開始分析

在設置完樣本資訊後，點擊「開始檢測」按鈕，實驗開始，如圖 24 所示。 功能區中部分別顯示即時資料的曲線、樣本孔位元和儀器運行溫度。功能區下部顯示孔位元按鈕、結果查看按鈕、倒計時水波紋和停止按鈕。

點擊溫度計區域，可以切換顯示當前實驗樣本資訊，如圖 24 所示，該區域顯示擴增曲線顏色、 檢測專案及樣本孔位元資訊。點擊選擇功能區下部的孔位元按鈕，可即時顯示選擇孔位元相應的資訊。
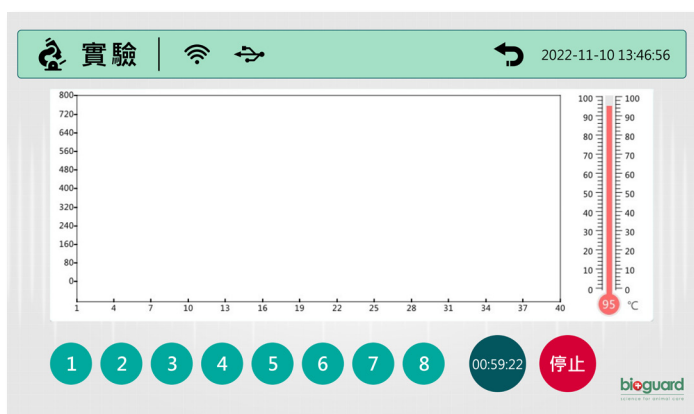
▲ 圖 24 儀器運行狀態 1

如果孔位元裡面輸入了樣本資訊，孔位元按鈕時預設選擇的，顯示為藍綠色，取消選擇後，按鈕顏色呈綠色，如圖 25 所示。

當沒有錄入樣本資訊時，按鈕顏色為白色，此時按鈕無法被選中。
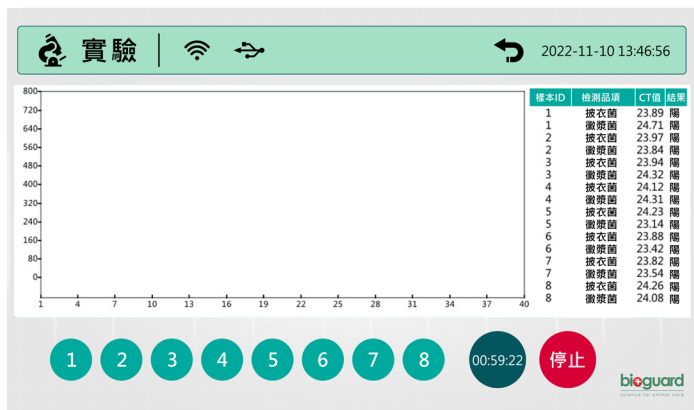
▲ 圖 25 儀器運行狀態 2

實驗運行過程中如要提前終止實驗時，請點擊「停止」按鈕，介面會彈出是否停止實驗的提示框。此時應慎重考慮是否停止實驗，選「是」停止實驗，選「否」則繼續實驗。如圖 26 所示。

▲ 圖 26 中途停止實驗

4.4.3 查看即時實驗結果

儀器正常運行完實驗後，會顯示軟體處理過後的資料，點擊「查看結果」按鈕，可以查看被選中孔位的結果。如圖 27 所示。
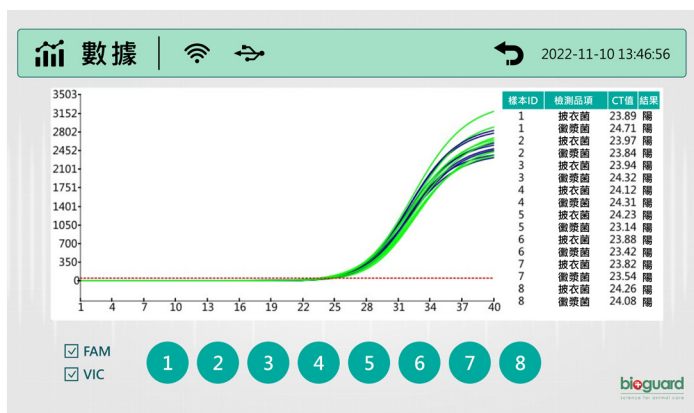
▲ 圖 27 即時實驗結果

實驗結束後，點擊「返回」按鈕，返回到主介面。

4.5 歷史資料

4.5.1 查看歷史資料

在主介面中，當沒有輸入樣本資訊的時候，「歷史記錄」可點選，如圖 28 所示。

▲ 圖 28 主介面

點擊「歷史記錄」按鈕，進入歷史資料介面。此時功能欄顯示歷史實驗資料、上下翻頁按鈕， 底部欄顯示「查詢」和「擴增曲線」按鈕以及當前頁數和總頁數。在未選中樣本行時「擴增曲線」 按鈕無法被選中。如圖 29 所示。

▲ 圖 29 歷史資料介面

　　當樣本結果行被選中時，選中的結果行呈藍綠色，此時「擴增曲線」按鈕可以選取。如圖 30 所示。

▲ 圖 30　樣本結果被選中

4.5.2　擴增曲線

　　點擊「 <u>⋀ 擴增曲線</u> 」按鈕，進入到擴增曲線介面，此時介面顯示選中行所處的實驗的所有樣本曲線資料，中部功能欄顯示擴增曲線和樣本檢測資訊，其中樣本檢測資訊包括「樣本名」、「檢測項目」、「Ct 值」和「結果」等資訊。

　　可以通過底部框孔位「 ①②③④⑤⑥⑦⑧ 」按鈕來選擇需要顯示孔位元的擴增曲線和樣本檢測資訊。「FAM」和「VIC」選擇框可以區分雙重檢測指標。如圖 31 和圖 32 所示。
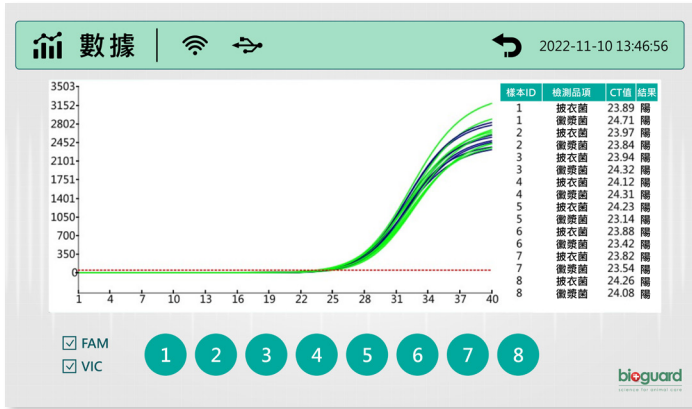
▲ 圖 31 擴增曲線
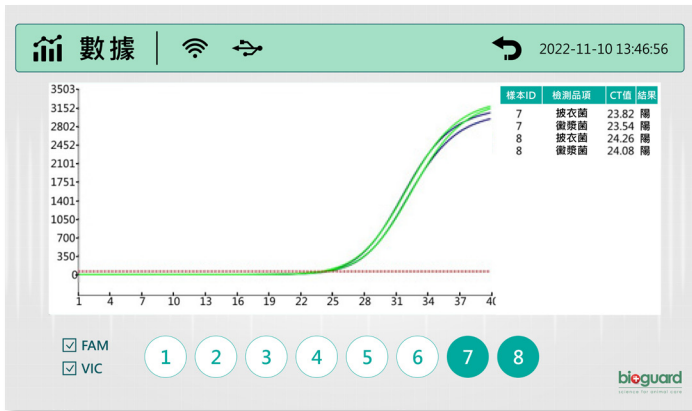
▲ 圖 32 查看對應通道樣本

4.5.3　查詢

　　在歷史資料介面中，點擊查詢介面，可以根據條件查詢需要的資料。如圖 33 和圖 34 所示，通過輸入測量日期或者輸入樣本 ID 來查詢所需資料。

▲ 圖 33 查詢

▲ 圖 34 查詢結果

第 5 章　PC 端軟體

5.1　軟體安裝

　　取出儀器附帶的 USB 隨身碟，將隨身碟插入到 windows 系統的電腦，打開隨身碟，將 「Qmini reporting system（解壓後直接使用）.7z」 的壓縮檔案複製至電腦，解壓縮。

　　打開解壓縮出來的資料夾，點擊應用程式「Qmini reporting system」，進入到 PC 端軟體介面。

📁 sqldrivers	2023/2/6 15:04	文件夹	
📁 styles	2023/2/6 15:04	文件夹	
📁 translations	2023/2/6 15:04	文件夹	
D3Dcompiler_47.dll	2021/5/19 11:11	应用程序扩展	
libEGL.dll	2020/3/28 3:04	应用程序扩展	
libgcc_s_dw2-1.dll	2018/3/19 21:12	应用程序扩展	
libGLESv2.dll	2020/3/28 3:04	应用程序扩展	
libstdc++-6.dll	2018/3/19 21:12	应用程序扩展	
libwinpthread-1.dll	2018/3/19 21:12	应用程序扩展	
opengl32sw.dll	2016/6/14 21:08	应用程序扩展	
Q mini reporting system v1.0.0.exe	2023/2/6 15:03	应用程序	
Qt5Core.dll	2020/3/28 3:04	应用程序扩展	
Qt5Gui.dll	2020/3/28 3:04	应用程序扩展	
Qt5Network.dll	2020/3/28 3:04	应用程序扩展	
Qt5PrintSupport.dll	2020/3/28 3:04	应用程序扩展	

▲ 圖 35 PC 軟體資料夾

　　PC 端軟體分為頂部欄、中部欄和底部欄。頂部欄顯示軟體名稱和版本號。中部欄顯示軟體導航 和具體資訊，底部欄顯示儀器連接狀態。中部欄的左側資訊欄有系統設置和資料管理，可以設置 PC 與儀器連接、更新儀器資料、即時顯示儀器運行狀態和查看歷史資料等。當未連接 PCR 儀器時，底部欄的指示圖示為紅色（圖36）。

▲ 圖 36 PC 端軟體介面

5.2 連接儀器

首先確保 PCR 儀器已經開啟，然後根據 4.3.1 步驟所示，獲取儀器 WiFi IP 位址。PC 端點擊「儀器連接」，進入到圖 37 所示介面，在 IP 位址框輸入儀器 WiFi ip 位址（圖 37 中輸入的是 192.168.2.121），埠號默認為 45454，保持預設不需要設置。點擊連接，底部欄的指示圖示變為藍綠色時表示儀器已經連接，如圖 41 所示。如果連接異常，請關閉軟體，檢查 WiFi 環境是否通信正常，檢查儀器是否連接好，按 5.1 的步驟重複操作步驟。

▲ 圖 37 儀器已連接

5.3 資料更新

更新儀器實驗資料到 PC 端：點擊「歷史數據」，進入歷史數據介面（圖 38）。點擊「更新數據」按鈕，進度條會顯示更新資料庫進度，當顯示「100%」時，表示資料更新完成。如果更新緩慢，請將儀器移動到 WiFi 訊號較強的環境。

▲ 圖 38 更新資料

| ! | 注意： | 請確保儀器放置在 WiFi 信號較強的環境，否則會影響資料傳輸的速度和穩定性 |

5.4   歷史資料

點擊「歷史數據」，進入到歷史數據介面，選中想要查看資訊的樣本，如圖 39 所示。

▲ 圖 39 歷史資料

5.4.1   報告

報告介面可滿足以下兩個功能：

1) 匯出 PDF 報告

2) 列印報告

選中一條實驗資料，點擊「報告」，進入到報告介面（圖 40）。左側為資訊編輯欄，右側為報告預覽欄。當編輯完資訊後，點擊打印，進入到圖 41 所示的完整預覽介面，點擊「　　」按鈕，列印完成。

▲ 圖 40 報告介面
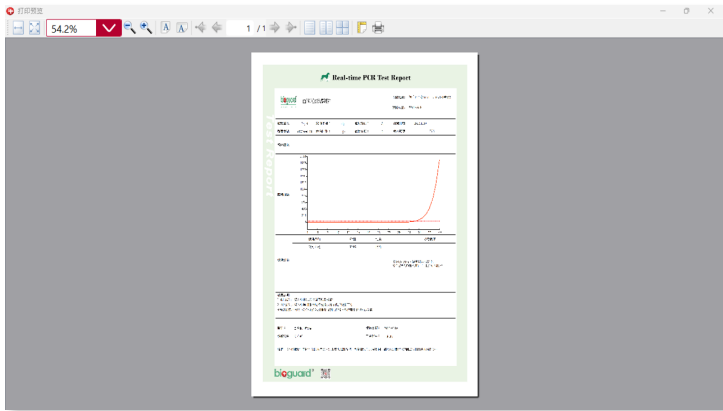
▲ 圖 41 完整的預覽列印

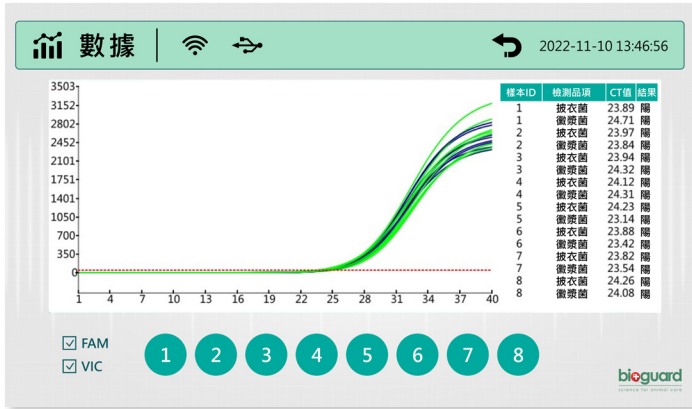
! 　　注意：　　請確保電腦連接印表機。

　　如果需要匯出報告，在存儲路徑一欄選擇需要存儲路徑的資料夾位置，點擊「匯出報告」，相應位置將生成檢測報告 PDF 文件（圖 42）。

▲ 圖 42 匯出 PDF 文件

5.4.2　查看擴增曲線

　　在主頁點擊「 ⟨⟨ **擴增曲線** ⟩」按鈕，進入到擴增曲線介面，此時介面顯示選中行當次實驗的所有樣 本曲線資料，中部功能欄顯示擴增曲線和樣本資訊。可以通過底部框通道「 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ 」按鈕來選擇相應的通道擴增曲線的顯示和隱藏。「FAM」和「VIC 」選擇框可以區分雙重樣本。如圖 43 和圖 44 所示。

▲ 圖 43 擴增曲線
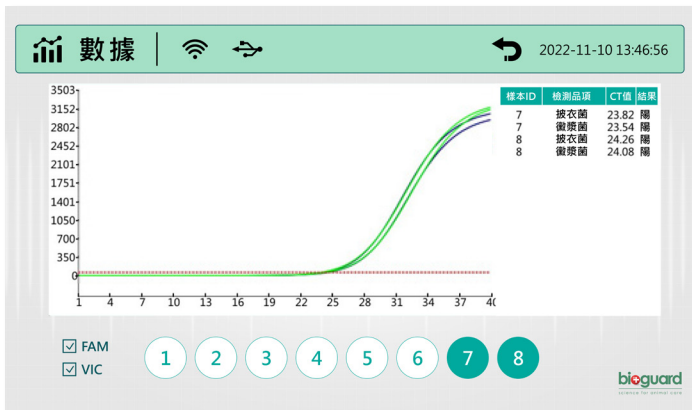
▲ 圖 44 擴增曲線 2

第 6 章　儀器維護與清潔

6.1　儀器清潔

6.1.1　儀器表面清潔

儀器的表面應定期用軟布加少量清水擦洗，清洗後將儀器擦乾。

6.1.2　反應孔清潔

1) 反應孔沾染灰塵或雜質後，會影響 PCR 擴增和螢光檢測，因此要定期清潔，一般 3 個月一次，可用吹氣球輕輕吹拭。

2) 為了防止灰塵進入反應孔，儀器不使用時，必須關閉加熱蓋。

3) 若有試劑進入樣本孔內，應用無塵軟布加 70% 酒精擦拭乾淨。

⚠️　注意：　清潔儀器前必須關閉電源，並拔掉電源線。不要將液體傾倒在反應模組中或者儀器內部。不能用強腐蝕性溶劑或者有機溶劑擦洗儀器。

6.2　儀器保護

1) 不要頻繁開關儀器；

2) 實驗結束後不要立即關閉電源，保持待機狀態 10 分鐘後（此時儀器內部風扇仍在持續工作），待模組溫度降至室溫再關閉電源；

3) 請使用原廠商提供的電源線；

4) 禁止在儀器上進行沸水浴或者低溫保溫（如 4℃）；

5) 非原廠維修人員禁止擅自拆開儀器。

第 7 章　常見故障及排除

7.1　故障分析與處理

序號	故障現象	原因分析	處理方法
1.	開機後，指示燈正常，螢幕黑屏	電源異常	排查醫院電路是否穩定，電壓是否正常，電源介面處是否均插緊
2.	開機後螢幕觸摸無反應	螢幕故障或者排線接觸不良	聯絡維修人員
3.	開機後，風扇不運行	內部排線問題或者風扇故障	重新關機，並盡快聯絡維修人員
4.	USB 介面插入 USB 隨身碟後無反應	USB 隨身碟格式不相容	檢查 USB 隨身碟是否為 FAT32 格式
5.	正常網路環境下，無法掃描識別出 WiFi	WiFi 網路無線頻率不符	確認提供網路是否為 2.4G WiFi 網路
6.	網路錯誤，請檢查網路	設備未連上網，或連接的網路信號不穩定，或者路由器故障	檢查使用網路環境
7.	上傳資料時，提示「未知錯誤」	設備未連上網，或連接的網路信號不穩定，或者路由器故障	檢查使用網路環境
8.	加熱異常故障提示	加熱器異常	聯絡維修人員
9.	儀器降溫異常故障提示	儀器降溫異	聯絡維修人員
10.	熱蓋感測器異常故障提示	熱蓋感測器異常	聯絡維修人員
11.	散熱片感測器異常故障提示	散熱片感測器異常	聯絡維修人員
12.	散熱片超溫故障提示	散熱片異常	聯絡維修人員

第 8 章　售後服務

　　我司保證您使用的 Qmini BVQ-1100 即時螢光 PCR 儀已通過了全面測試，並且達到說明書的使用要求。 使用本儀器必須遵守本使用者手冊所給出的指導和安全警示，否則均不在擔保範圍內。 自帶軟體：任何與此產品有關的軟體作為一種服務免費提供給客戶，該軟體是運行儀器的一種必需工具。

　　責任：我司對不遵守使用手冊給出的使用規程或不正確使用 Qmini BVQ-1100 即時螢光 PCR 儀所產生的直接或間接、附帶的損失不負責任。只有我司的技術人員或其代理機構才能檢查或提供有關儀器 的任何零部件，我司對於用戶隨意拆裝更換零部件使儀器所產生的直接或間接、附帶的損失不負責 任。

　　檢測所提示的結果僅供為診斷參考，不能作為臨床用藥、手術、預後的決策的全部或直接依據。寵物醫生應結合寵物的臨床症狀的結果判斷，和其他檢測指標一起協同。

　　在實際使用過程中，會因環境因素如環境形成前面檢測專案的氣溶膠污染，電壓不穩定等；人為操作因素如提取操作失誤，未嚴格按使用說明書要求等；設備因素如震動、使用不當，故障情況 下使用等；試劑盒保存因素如高溫條件下，高濕度條件下，強光直射條件下，試劑品質明顯不合格 等條件下，檢測結果出現假陰性、或假陽性、或與臨床症狀不相符合，或與其他同類產品檢測結果 不相符合。我司的檢測作為輔助診斷的指標，醫生不能因檢測結果導致醫療失誤、事故，而把我司 追為事故責任方或相關方。

　　使用 Qmini BVQ-1100 即時螢光 PCR 儀前，請務必認真閱讀該使用手冊，以確保您能得出最理想的實 驗結果。

　　檢測過程如有疑問處請及時聯繫我司銷售工程、售後技術支援。