

# Veri-Q PCR 316 QD-P100



## User Manual

Apr. 2020

Cat No. 9R501

*MiCo BioMed*

# User Instructions

**Common name : Gene amplification device**

**Brand name : Veri-Q PCR 316**

**Model name : QD-P100**

For safe use, please use the device after reading the manual thoroughly.  
Please furnish this document at a designated location so it can be used at all times.



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# Table of Contents

<b>1. Before you begin</b>	<b>5</b>	<b>6. Warranty Policy</b>	<b>58</b>
1-1. About the manual	5	<b>7. Return Policy</b>	<b>58</b>
1-2. General Requirements for Installation	5	<b>8. Classification of Symbols</b>	<b>59</b>
1-3. How to Obtain More Information	5	<b>9. Disposal of Electrical &amp; Electronic Equipment</b>	<b>60</b>
1-4. About Customer Support	5	<b>10. EMC &amp; Safety Test Results</b>	<b>60</b>
1-5. Precautions on distribution or duplication of the manual	5	<b>11. Purchase of Reagents and Consumables</b>	<b>61</b>
1-6. Laboratory Biosafety	5	<b>12. Maintenance Checklist</b>	<b>62</b>
<b>2. Precautions when using QD-P100</b>	<b>6</b>		
2-1. Purpose of use	6		
2-2. Principles of operation	6		
2-3. General Precautions	6		
<b>3. Product Component and Specification</b>	<b>14</b>		
3-1. Product Composition and Characteristic	14		
3.2 How to Use	20		
3-3 Preparation for Experiment	27		
<b>4. How to Install and Use the Operating Program</b>	<b>30</b>		
4-1. Execution of Distribution CD and Installation of Operating Program	30		
4-2. How to Use the Operating Program	37		
4.3. PCR Chip Setting	42		
4.4. Operation	48		
4-5. Data Analysis	50		
<b>5. Troubleshooting</b>	<b>56</b>		
5.1. Error Message	56		
5.2. Maintenance	57		

## 1. Before You Begin

### 1.1 About the manual

This manual is prepared for researchers or related staff for using and conducting research using **Veri-Q PCR 316 - QD-P100** and for related staff who installs and maintains the product.

### 1-2. General Requirements for Installation

If you wish to use this manual, the following is required.

- Pure DNA/RNA suitable for QD-P100 must be used.-When used in connection to a computer, there should be no problem in using Windows 7 or XP Operating System.-You must have basic knowledge in handling DNA and RNA samples for PCR.
- You must be familiar with general method of use such as saving, copying, and pasting data on the hard drive.
- ※ **While this equipment can be used as a stand alone without a computer, there should be no problem in using Windows7 operating system when connected to a computer.**

### 1-3. How to Obtain More Information

To obtain information related to **QD-P100**, please visit Mico Biomed website([www.micobiomed.com](http://www.micobiomed.com)) or send an e-mail to [salesbio@micobiomed.com](mailto:salesbio@micobiomed.com).

### 1-4. About Customer Support

Mico Biomed is using 070-5227-6000 for prompt customer support of the product and to minimize inconvenience. We are also prepared to listen to our customer's questions and comments at all times from the customer's voice(Q&A) bulletin board at Mico BioMed Co., Ltd. website([www.micobiomed.com](http://www.micobiomed.com)).

### 1-5. Precautions on distribution or duplication of the manual

The content of this document cannot be altered and duplicated without the permission of the copyright holder, MiCo BioMed Co., Ltd.

### 1-6. Laboratory Biosafety

Non-propagative diagnostic laboratory work (e.g. sequencing, NAAT) should be conducted at facilities and procedures equivalent to BSL-2.

## 2. Safety Guideline

### 2-1. Purpose of use

QD-P100 is an instrument for performing real-time polymerase chain reaction (Real-time PCR) that can rapidly and accurately amplify target nucleic acid for disease diagnosis.

This instrument can be used in the area of in vitro diagnosis, and should be used by a trained personnel with professional skills. This product is for In Vitro Diagnostic device.

### 2-2. Principles of operation

This product is the Instrument to amplify nucleic acids (DNAand/orRNA) of specific genes in human cells by using the principle of Polymerase Chain Reaction (PCR), enabling confirmation of the amplification and accumulation of genes real time. By using the complementary primer for specific target genes and the probe labeled with fluorescence dyes, the Instrument measures the fluorescence generated during PCR amplification, and then measures whether or not the target gene is present in samples and the amount of the initial template.

The value of fluorescence generated to amplify the genes with PCR is recorded in Photodiode.The fluorescent chromosomes mainly used are FAM, HEX, TEX, and CY5, and it is possible to measure them entirely or selectively by using the power LED light sources photodiode, and light filters.

### 2-3. General Precautions

QD-P100 System must be used by a trained personnel with specialized skills related to genetic analysis. Please read this manual before operating the device. If the usage method and precautions in the manual is not followed, it may threaten the safety of the personnel using the device. Please read and follow the warning indicated in the sign.

	<b>WARNING</b> – It may cause the risk of physical injury or death or damage to the device if the guideline or procedure is not followed.
	<b>Waste</b> – Do not dispose of the product with general household waste. Local waste collection regulation for electronic and electric products must be followed.

#### 2-3-1. Warning and Prevention



#### **WARNING**

QD-P100 System is an electronic and mechanical device. Since there is a risk of electric shock or physical injury, you must operate the device according to the user manual. The manufacturer is not held responsible for problems arising from not observing the safety precautions. Follow the safety precautions attached to the device.

1. Please comply with general safety requirements applied to the electronic device.
2. Do not access the internal part of the equipment while it is turned on.
3. Do not move the device while the PCR is under operation.
4. When cleaning the device, perform cleaning after turning off the power and unplugging the power cord.
5. Do not use the device near water.
6. Prep reagent, solvent, etc. can affect the PCR results.
7. Purified or concentrated nucleic acid (DNA/RNA) can affect the PCR results.
8. Do not touch the switch, power cable or device with wet hands.
9. Do not randomly dismantle or remodel the device. It may cause fire, electric shock, and breakdown, and you will not be able to receive after service.
10. Only a designated engineer can provide repair and services.
11. Do not overload the power outlet. It may cause fire or electric shock.
12. Please install the device on a clean and level surface. Corrosive gas or high density magnetic location can damage the device. Do not install on an unstable or sloped location. If the device is wet, immediately unplug the power cable.
13. Do not use the device for purposes other than gene amplification or real-time quantitative analysis. It may cause malfunction of the product or injury.
14. Do not use components other than the ones provided by the manufacturer. It may cause the malfunction or breakdown of the product.
15. In case of any one of the following conditions, unplug the power cable and make an inquiry to the manufacturer.
  - ▶ If power cord or plug is damaged
  - ▶ If the device is exposed to water or liquid
16. Do not place items on the device or sit on it.
17. This equipment has been designed according to CISPR11, Class A. In a domestic environment, it may receive interference, and in such a case, you may be required to take measures for alleviating the interference.
18. Evaluation on the electromagnetic environment should be conducted prior to the operation of the device.
19. Do not use this device near sources of powerful electromagnetic radiation (e.g. Unshield intentional RF sources). These may interfere with normal operation.

- In case of an emergency, immediately unplug the power cable.



Or turn off the power switch.



**! WARNING – Chemical Safety**

Refer to MSDS before handling chemical substances, and comply with all related precautions. The waste generated while using the device may cause injury, disease or death. Refer to the MSDS and local regulations for handling, storing, and disposal of wastes.

**! WARNING – Chemical Waste Disposal**

Please wear appropriate protective gear such as goggles, garment, gloves, etc. when disposing reagents and chips. You must wear safety gear when handling toxic substance and substance which cause infection. Store, transport and dispose the wastes according to all local, regional or national regulations.

**☀ Caution – LED Safety**

You may be exposed to LED if you do not comply with safety precautions.

**2-3-2. Shipping and Transport**

QD-P100 System is packaged in a hard case, and is shipped in a box. The hard case includes QD-P100 System and its components. The product components, specification, PCR installation, and usage method are explained in detail later on. Even when warranty period is valid, abnormality that has occurred due to inappropriate packaging and transport is excluded from the warranty.

1. Condition during transport and storage

Allowable temperature	Room temperature
Relative humidity	20% to 90% (without condensation)

2. Shipping method

Use the hard case included as a component when moving or transporting the device. The device must be transported in a hard case.

1) Open the case.



2) Place the device in the hard case.



3) Close the hard case.



4) Lock the case.



5) Transport while carrying it with a hand.



Please proceed in reverse order when unpacking.

### 2-3-3. Operating Environment and Installation

If precautions are not followed when installing the device, it may cause risk. Please follow the guideline.

1. This device is a precise optical device. Please install the device away from direct sunlight and strong light.
2. Check the power condition and use the device. The product can use both 220V/110V. For stable use of the product, use of automatic voltage regulator (AVR) or UPS (Uninterrupted Power Supply with AVR function) is recommended.
3. Use grounded power supply. If the device is not grounded, you can incur physical injury by lightning, and cannot use the product stably.
4. Do not use the power plug when it is loose. The plug becomes damaged due to overheating and may cause fire or electric shock.
5. Wipe dust off the power plug, and plug it firmly so it does not shake. If the connection is unstable, it becomes the cause of fire.
6. Do not use multiple devices on a power outlet at the same time. Abnormally generated heating of the power outlet due to overload becomes the cause of fire.
7. When installing the product, install the system body at least over 10 cm away from the wall and over 20 cm away from other items. If the product is installed close to the wall, it becomes

the cause of product breakdown.

8. Do not place items that can interfere with the operation around the product. This may interfere with the operation of the product, and abnormality may occur when operating the door.
9. Install the device away from a place with a lot of dust. It becomes the cause of malfunction or breakdown of the product.
10. Install away from heating devices such as electric heating appliance. It becomes the cause of fire.
11. Install the device away from a place where water splashes or a place with much moisture. It becomes the cause of electric shock, fire, and breakdown.
12. Do not install the device in a place where flammable or corrosive gas is generated. In case of gas leakage, do not operate the power plug of the device but open the window for ventilation. Sparks may fly and cause an explosion and fire.
13. Do not randomly dismantle or remodel the device. It may cause fire, electric shock, and breakdown, and you will not be able to receive after service.

**CLASS 1 LED PRODUCT**

< QD-P100 System is an LED Grade Class 1 product. >

**CAUTION - CLASS 2M LED  
RADIATION WHEN OPEN  
DO NOT STARE INTO THE BEAM OR  
VIEW DIRECTLY WITH OPTICAL  
INSTRUMENTS**

< Class 2M LED module is used inside QD-P100 System. >

#### 1. Conditions

- Operating temperature: 15 ~ 32°C
- Operating humidity: 20 ~ 80 %
- Max. 80% without condensation (under 32°C conditions)
- Min. 20% (under 15 ~ 32°C conditions)

#### 2. LED Module

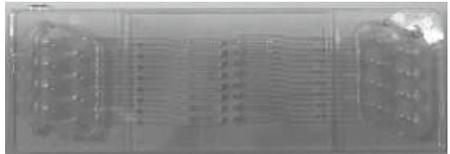
- Please refer to page 15 for product specification.
- Frequency: LED is turned on about every 4 seconds per cycle. It does not light up if the device is not operating.

**CAUTION**

The computer should have a communication port for USB data transfer. Do not install a memory stick when the device is operating. A problem may occur in the communication between the device and the computer.

**2-3-4. Consumable**

A disposable consumable is required for the operation of the device. Labchip is produced only for the QD-P100. Do not use the chip more than 2 times. It may bring about unreliable results.

Disposable	Description
	<p><b>QD-P100 Labchip</b></p> <p>Pour a set amount of reagent per channel in the Labchip and close the chip case.</p>

**2-3-5. Warning and Caution for Use and Management**

The QD-P100 System does not require regular cleaning.

**1. Warning and Caution for Use and Management**

- Do not use the device for purposes other than gene amplification or real-time quantitative analysis. It may cause malfunction of the product or injury.
- Manage the LabChip part so that it is not stained with foreign substances. It may cause product breakdown or injury, and accurate experiment data cannot be obtained.
- Do not use the device while placing paper or bottom board made out of synthetic resin underneath the device. It may cause fire.
- Do not cover the product with paper, vinyl, etc. when the device is in operation. It becomes the cause of fire and breakdown of the device.
- When using the device in connection to a computer, set "Turn off monitor", "Turn off hard disk", "System standby mode", and "System hibernate mode" in power option as "Not used."
- If the QD-P100 is operated in connection to a computer, since it communicates a large amount of data in real-time, an error may occur during operation if the monitor or hard disk is turned off.
- If the device malfunctions, an error indication lamp lights up and an error code is displayed on the LCD screen. If an error occurs, do not operate the device by force and ask the head office for assistance.
- If the product is randomly dismantled, the user can be exposed to the LED, and if the user's eyes are exposed to it, an injury may be incurred.

- Since high temperature conditions are maintained inside this product, the user can be burned when exposed. Do not touch the thermal block. You must be careful since the thermal block is hot when the device is operating.
- Do not recharge the coin battery. If the battery is replaced in a wrong manner, there is a risk of an explosion.

**WARNING**

The power cable must be unplugged when cleaning the device.

**WARNING**

Do not pour liquid into the chip door.

**Transport, Storage and Preservation Method**

	Under operation	In storage	In transport
Temperature (°C)	15 ~ 32	Room temperature (RT)	Room temperature (RT)
Relative humidity (%)	20 ~ 80	20 ~ 90	20 ~ 90
Pressure (kPa)	70 ~ 100	70 ~ 100	70 ~ 100

- Store the device at a location with no moisture.
- Do not store at a location adversely affecting the device with pressure, temperature, humidity, ventilation, dust, and air containing salt, etc.
- Be careful of safety conditions such as slope, vibration, shock, etc. (including when driving a car)
- Regular inspection must be performed on the device and its components.
- When re-using the device that has not been used for a while, make sure the device is clean and check whether it works safely before use.

**2-3-6. Limitation**

The QD-P100 is optimized to use with Veri-Q PCR 316 reagent kit made by Mico BioMed and it couldn't guaranteed performance excepting the system.

### 3. Product Component and Specification

#### 3-1. Product Composition and Characteristic

The warranty period of the product is 1 year from the date of purchase. However, in case of a breakdown due to the user's negligence, free warranty is not available. If a breakdown occurs after the warranty period, a fee will be charged for the repair. Before installing the product, check whether all items in the following product composition is included in the product package.

##### 3-1-1. Product Composition



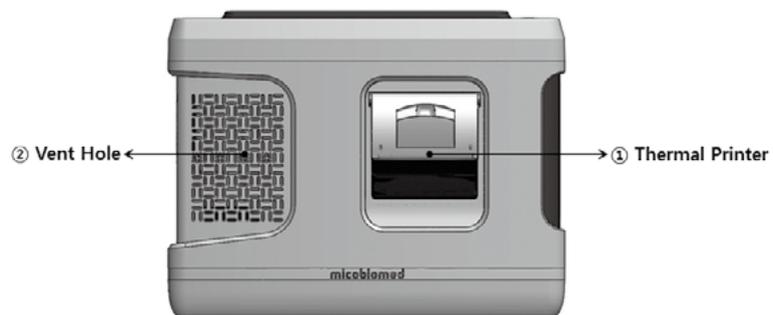
Component	Quantity	Check (O,X)
QD-P100 Instrument	1	
Real-time PCR QD-P100 - software - Guides - Drivers	1	
AC Adapter - Model designation : SNP-A127-M - Manufacturer : SKYNET ELECTRONIC CO LTD, - Input : 100-250V, 3-1,5 A, 50 / 60 Hz - Output : 12 V dc, 9 A	1	
Main power cable (EU)	1	
USB cable A to B	1	
Labchip case	1	
Labchip	1	
Rubber	1	

Optional Components	
Chip cradle	1
SW CD	1

<b>Common name</b>	Gene amplification device
<b>Brand name</b>	Veri-Q PCR 316
<b>Model name</b>	QD-P100
<b>Software</b>	QD-P100 RTPCR_2.00 Ver
<b>Temperature range</b>	40 ~ 120 °C
<b>Temperature accuracy</b>	±0.3°C at 90°C setting condition
<b>Temperature uniformity</b>	±0.3°C within 30 seconds at 90°C setting
<b>Input rating</b>	12 V dc
<b>Input current</b>	9A
<b>Detection</b>	Photo diode
<b>Ports</b>	USB
<b>Weight</b>	4.7Kg
<b>Dimension</b>	274x170x206mm
<b>Fluorescence Wavelength (Excitation)</b>	FAM – 483±18nm
	HEX – 534±12.5nm
	Cy5 – 628±19nm
	Texas Red – 586±13nm
<b>Fluorescence Wavelength (Emission)</b>	FAM – 535±24nm
	HEX – 572±16.5nm
	Cy5 – 692±23.5nm
	Texas Red – 623±15nm
<b>Fluorescence type</b>	FAM, HEX, Cy5, Texas Red,
<b>Battery</b>	Coin battery (CR2032)

### 3-1-3. Device Structure and Name

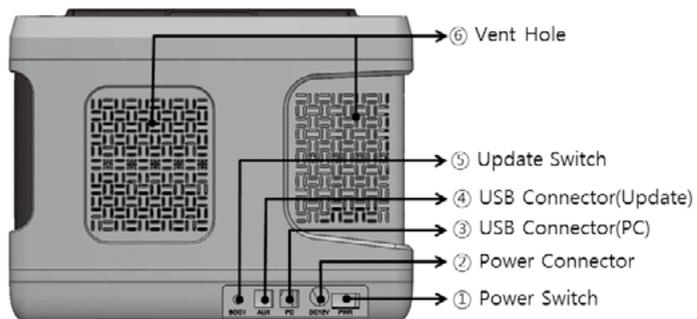
#### 1. Front View



#### 2. Top View



#### 3. Rear View



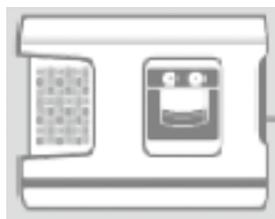
#### 4. Side View



### 3-1-4. How to Install Product

#### 1. Device Connection

	<ol style="list-style-type: none"> <li>1) Open the hard case.</li> <li>2) Check whether nothing is wrong with the components and the device.</li> </ol>
	<ol style="list-style-type: none"> <li>3) Connect the adapter to the power port.</li> </ol>
	<ol style="list-style-type: none"> <li>4) Connect the AC inlet of the AC adapter to the main power cable.</li> </ol>
	<ol style="list-style-type: none"> <li>5) Connect to the power outlet.</li> </ol>



6) Install QDInstallManager.exe

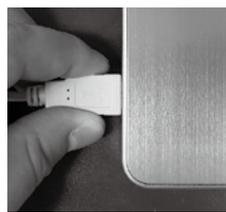
## 2. Computer Connection

In the back of QD-P100 system, there is a power connection port, and a data transmission cable connection (USB port) for sending and receiving data to and from the computer.

Follow the following procedure to install the QD-P100 system and connect it to the computer.



7) Connect the cable to the USB port at the back of QD-P100 system.



8) Connect the opposite side of the USB cable to the computer.

## 3. Precautions upon Installation

Please install the product according to the manual. If the location of the product installation is wrong, the device can be damaged.

- Install the device away from direct sunlight.
- Unplug the cable and turn off the power before installation. It may damage the computer or the device.
- Check if the USB is properly connected. If the connection is unstable, an error may occur upon data transmission.
- Please be careful to prevent damage of the device due to static.

## - Installation Location

The backside should be installed more than 10cm away from the wall.

The side of the device should be installed more than 20cm away from the wall or other items.



## 4. Product Installation

**The QD-P100 System is a Stand alone device** that can be operated without a computer.

**The product's operating program should be installed on the computer in order to operate QD-P100 system** in connection to a computer. Please refer to this chapter if you are installing for the first time or if you need to inevitably reinstall the program on the computer installed upon purchasing the product. For re-installation, you must follow the order by referring to this chapter.

You must first prepare a desktop or laptop in order to use the QD-P100 system in connection to the computer. The recommended requirement for the computer suitable for using the QD-P100 system is as follows. For other inquiries, please contact the customer support center of MiCo BioMed. If the computer does not satisfy the recommended requirement, the QD-P100 system will not work properly or a problem may arise when the device is operated.

### Recommended Requirement of Computer

- 1) Intel Dual Core E2160 (1.8GHz) or higher
- 2) Window 7 for Korean or English Version
- 3) 2.0GB RAM or higher
- 4) Screen resolution: 1920 \* 1280 or higher
- 5) USB 2.0 high speed port
- 6) 20GB hard disk drive minimum
- 7) Microsoft Excel, Word (Option)

For matters regarding the computer and installation of OS not directly related to QD-P100, please make an inquiry to the computer dealer or computer after service support center.

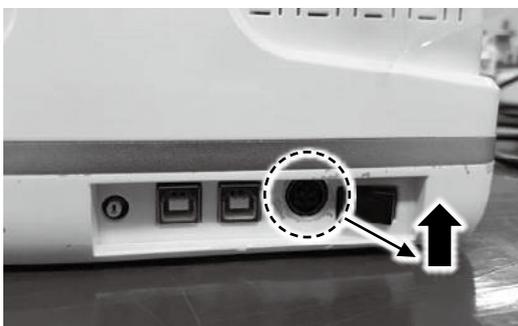
## 3.2 How to Use

### 3-2-1. Device Operation and Experiment Preparation

If the device and the computer are installed and connected according to the product installation method, check the normal operation of the device and start the experiment.

### 3-2-2. Power Supply and Self Test Method

1. Connect the adapter cable to the power connector at the back side of the QD-P100 body.  
 (\*\*Caution: Based on the direction of viewing the power connector, the direction of the arrow of the adapter cable should face upwards. If the adapter cable is inserted in the opposite direction, even if it does not fit, it can be forced in with strong force, and in this case, the electronic circuit can be critically damaged.)

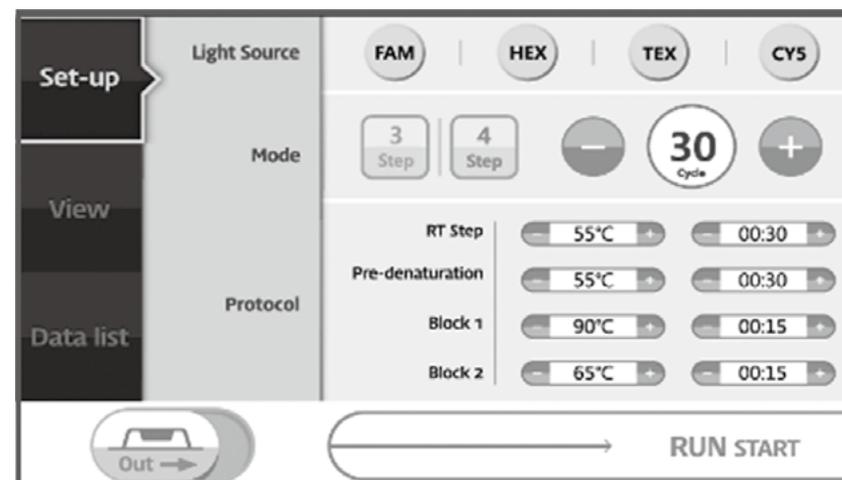


2. If you connect the adapter cable and turn on the device, it boots up and initializes. The LCD screen displays the company logo until initialization is completed, and a blue light will light up on Run LED (status LED). If the initialization is finished, it switches over to the main menu screen, and a green light turns on. The green light coming on means the device is working properly.

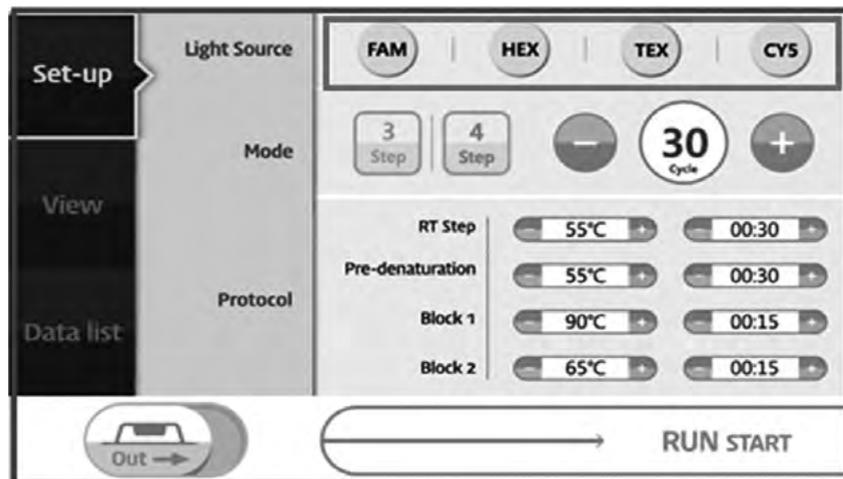


### 3-2-3. Description of Program Screen

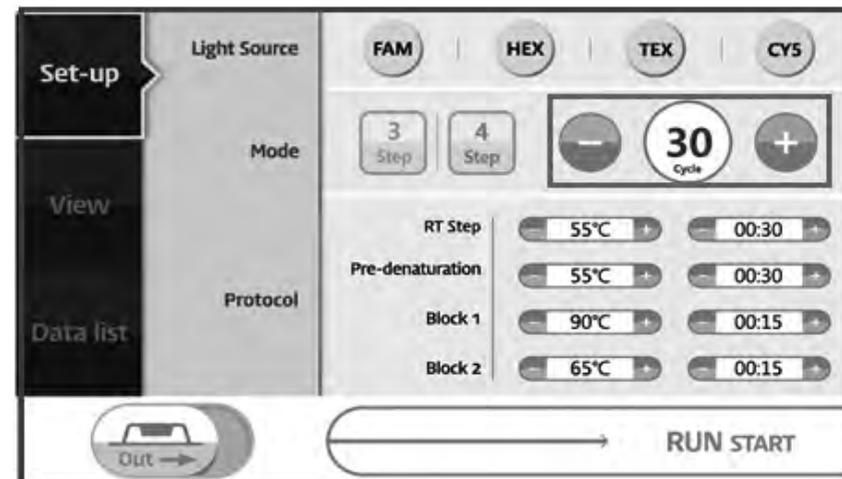
- The main screen is displayed several minutes after the device is connected to the power.



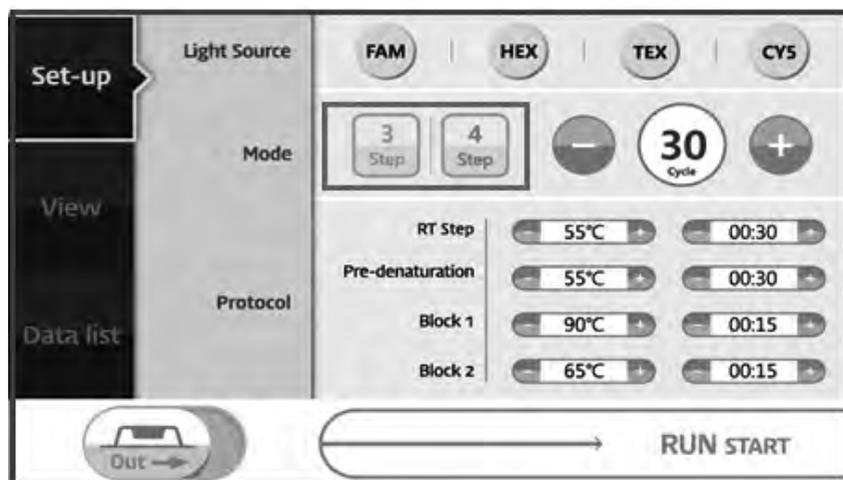
- Select the light source of the sample to be measured.



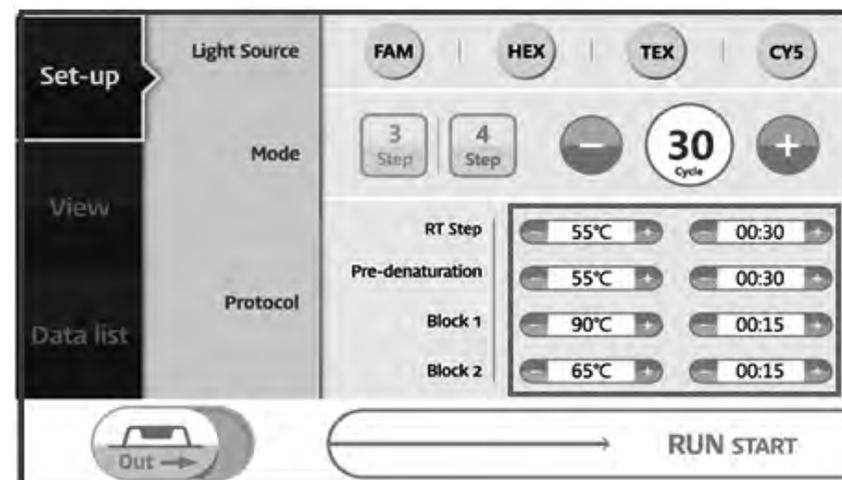
- Set the number of cycles of the sample to be measured.



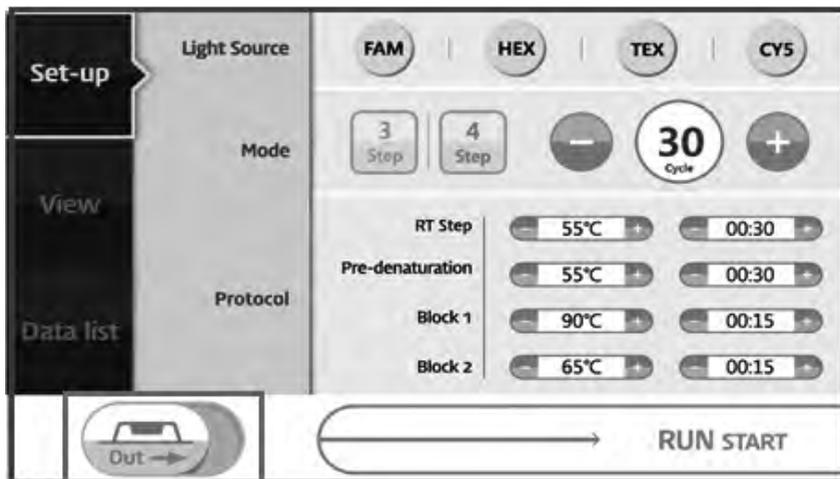
- Select a number of protocol steps.



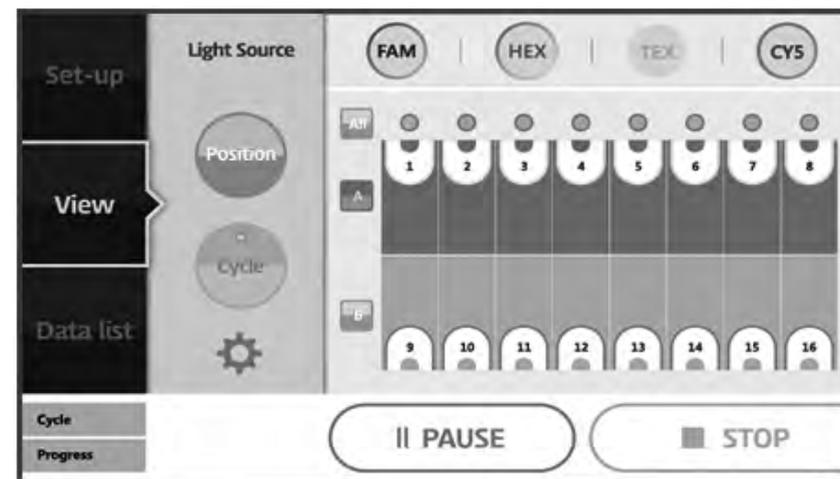
- Set the temperature and time of the sample to be measured.



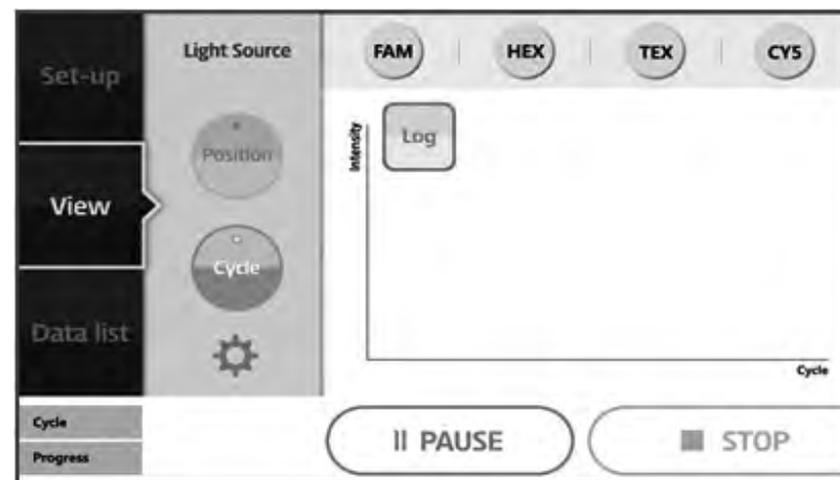
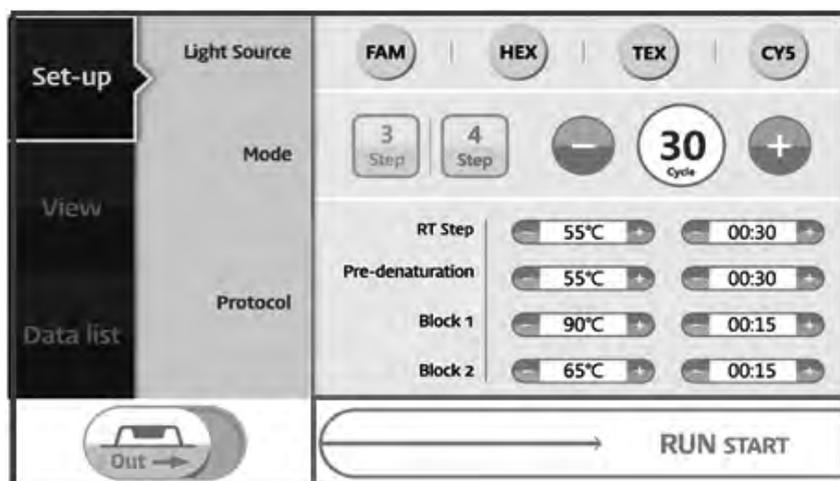
- The door of the device can be opened and closed by pressing Chip In/Out button.



- Progress can be checked in the View tab while PCR is in progress.



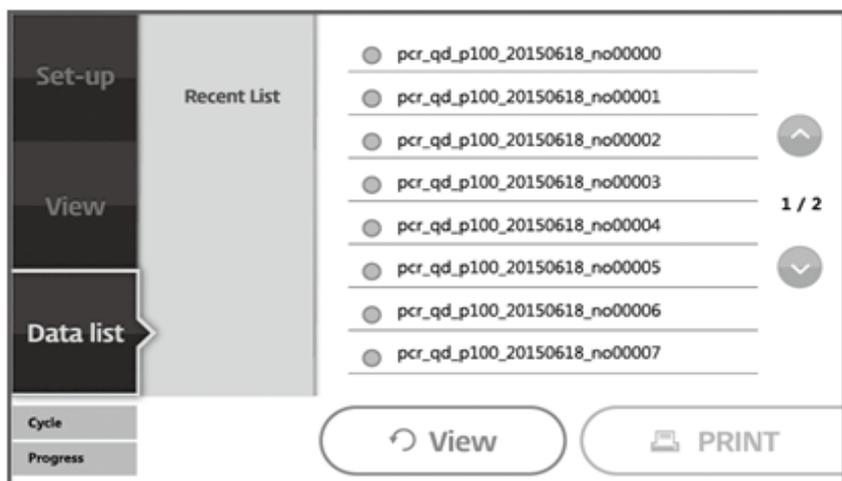
- The device can be operated by pressing RUN START button.



- When PCR is finished, a pop-up window informing that the PCR is finished pops up.



- The completed PCR data is saved inside, and the saved data can be checked immediately by printing it through the printer built into the device.



### 3-3 Preparation for Experiment

For sample preparation, see the instructions for use of Veri-Q PCR 316 reagent kit made by Mico BioMed

#### 3-3-1. Sample Insertion

Insert the prepared sample into the chip.

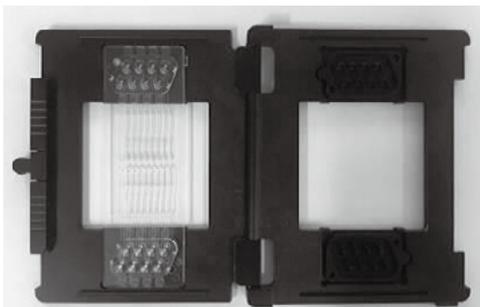
#### 3-3-2. Preparation of LabChip Case and Rubber Cover

Prepare the chip case and rubber cover as shown in the photo below.

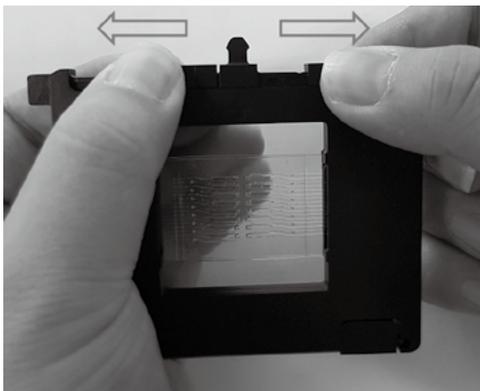


### 3-3-3. LabChip Case Mounting

As shown in the photo below, the left part is the bottom board and the right part is the part that will cover the left part. Place the rubber cover on the right part to fit the shape, and place the chip on the left part.

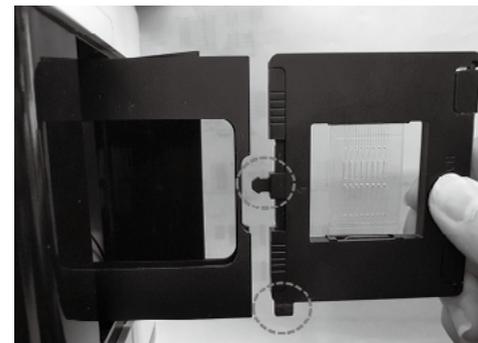


Cover the right part with the left part and pull the fixing clip to either side as shown in the photo below.



### 3-3-4. LabChip Insertion

Chip door will automatically open once the device is turned on. When inserting the chip case, the circled part in the following photo must head toward the device.



Gently push and insert it until a “click” sound is heard. (Caution – While the chip case is being completely inserted, do not forcibly push the chip case.)

### 3-3-5. LabChip Removal

Once the experiment is finished, the chip door will automatically open. Press the chip in the direction of insertion until a “click” sound is heard, and then, take out the chip case and remove the rubber cover and the chip.

※Do not re-use the Labchip since it is disposable.

## 4. How to Install and Use the Operating Program

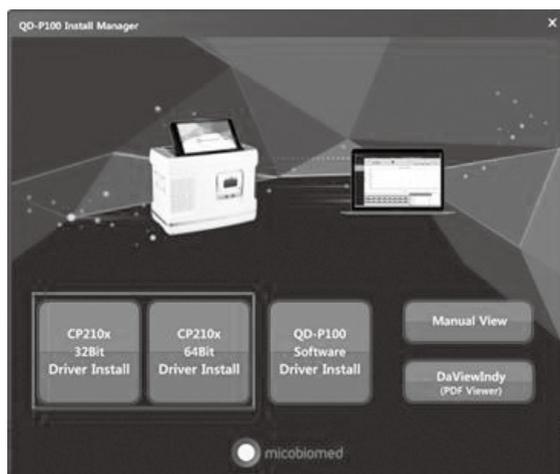
### 4-1. Execution of Distribution CD and Installation of Operating Program

#### 4-1-1. Execution of Distribution CD



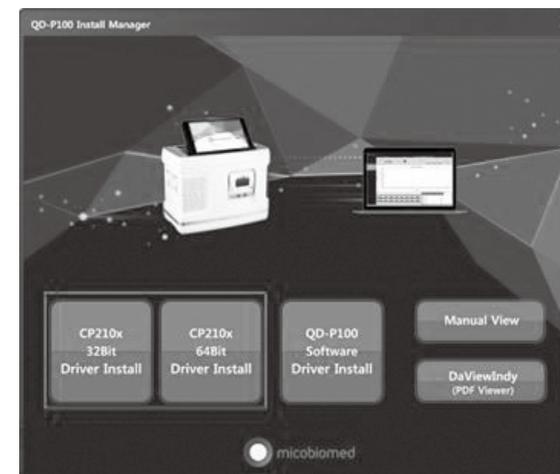
<Figure 1> QD-P100 Distribution Program Folder and Execution File

1. If QD-P100 Install Manager distribution CD is inserted into the computer, you can check the folders and files as shown in <Figure 1>.
2. Run the execution file, "QD-P100 Install manager.exe" file.



<Figure 2> QD-P100 Install Manager Program Execution Screen

#### 4-1-2. CP210x Driver Install(32bit, 64bit)



<Figure 3> CP210x Driver Install Button

1. Select "CP210x 32Bit Driver Install", or "CP210x 64Bit Driver Install" button as shown in <Figure 3>.



<Figure 4> CP210x 64Bit Driver Install Execution Screen-1

2. Select "Next" button as shown in <Figure 4>.



<Figure 5> CP210x 64Bit Driver Install Execution Screen-2

3. Select "I accept this agreement" and then "Next" button as shown in <Figure 5>.



<Figure 6> CP210x 64Bit Driver Install Execution Screen-3

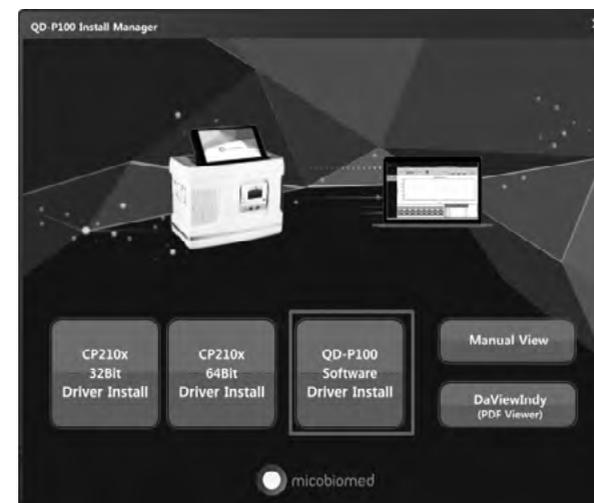
4. The driver is installed as shown in <Figure 6>.



<Figure 7> CP210x 64Bit Driver Install Execution Screen-4

5. Select "Finish" button as shown in <Figure 7>.

#### 4-1-3. QD-P100 Software Install



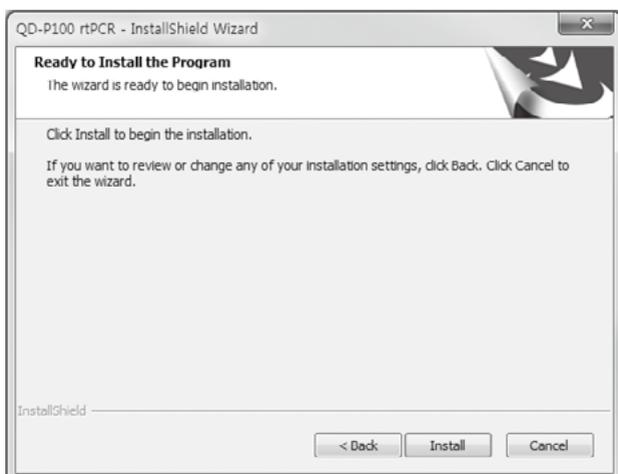
<Figure 8> QD-P100 Software Install Execution Screen-1

1. Select "QD-P100 Software Install" button as shown in <Figure 8>.



<Figure 9> QD-P100 Software Install Execution Screen-2

2. Select "Next" button as shown in <Figure 9>.



<Figure 10> QD-P100 Software Install Execution Screen-3

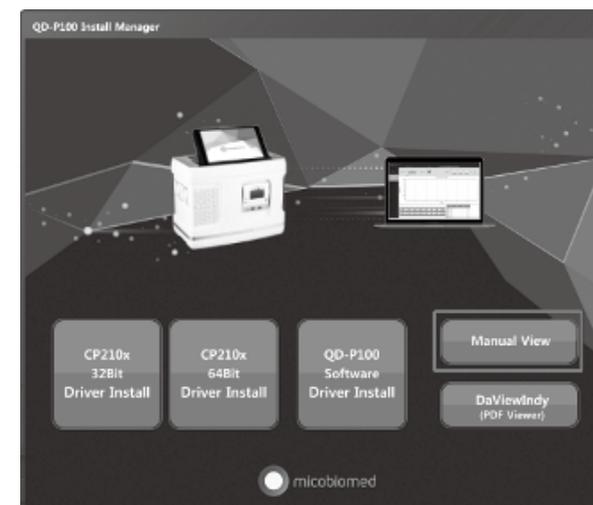
3. Select "Install" button as shown in <Figure 10>.



<Figure 11> QD-P100 Software Install Execution Screen-4

4. Select "Finish" button and finish installation as shown in <Figure 11>.

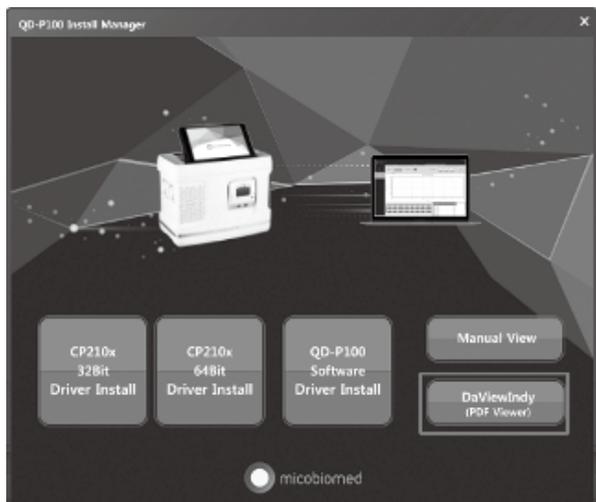
#### 4-1-4. Manual View



<Figure 12> Manual View Execution

1. If "Manual View" button is selected as shown in <Figure 12>, you can check the Manual file in PDF format.

#### 4-1-5. DaViewIndy(PDF Viewer)



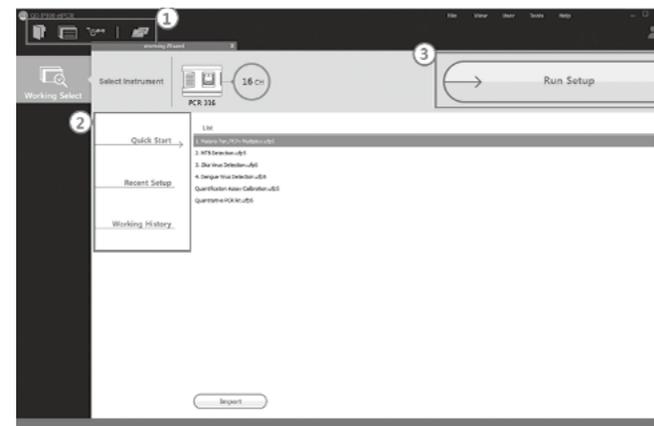
<Figure 13> DaViewIndy Installation

1. If "DaviewIndy" button is selected as shown in <Figure 13>, you can install PDF Viewer program.

## 4-2. How to Use the Operating Program

### 4-2-1. Working Wizard

In the working wizard, you can view the list of settings previously experimented and the list of result files.



<Figure 1> QD-P100 rtPCR Working Wizard

#### 1. Connection Status

Generally, you should connect the communication cable between RTPCR device and PC, and run the program while the power is turned "On."

#### If properly connected:

If properly connected, you can view only the screen of <Figure 1>.

#### If not properly connected:

If improperly connected, you can view a pop-up window as shown in <Figure 2>.



<Figure 2> Pop-up for improper connection

This program turns off if “Yes” is pressed. If “Retry” is pressed, it attempts to connect once again. If “Ignore” button is pressed, the screen of the program is displayed, but the connection with the device is ignored.

## 2. Top Toolbar Buttons



: The button for importing executed files.



: The button for showing Working Wizard screen.



: The button for showing Run Setup screen.



: The button for showing the list of experiments done on the QD-P100 device.

Device Data List				
no.	FAM	Cycles	Time	Protocol
no.1	FAM	45cycles	2016-07-15 22:16:52	User Protocol
no.2	FAM	45cycles	2016-07-15 20:16:58	User Protocol
no.3	FAM	45cycles	2016-07-15 11:54:18	RT Reference.ptd
no.4	FAM	45cycles	2016-07-15 11:07:10	RT Reference.ptd
no.5	FAM	45cycles	2016-07-14 19:17:11	RT Reference.ptd
no.6	FAM	45cycles	2016-07-14 18:40:37	RT Reference.ptd
no.7	FAM	45cycles	2016-07-14 17:51:40	RT Reference.ptd
no.8	FAM	45cycles	2016-07-14 17:11:30	RT Reference.ptd
no.9	FAM	45cycles	2016-07-14 16:31:43	RT Reference.ptd
no.10	FAM	45cycles	2016-07-13 23:14:15	RT Reference.ptd

<Figure 3> Pop-up window of list of experiments done on the QD-P100 device



Once clicked, a pop-up window appears as shown above.

**Create UFP5:** Converts the working information of the currently selected list into ufp5 file and displays it on the window.

**Print Results:** It can print the CT results of the working information of the currently selected list.

## 3. Working Select

**Quick Start** → : Shows the quick execution list of the set working files.

**Recent Setup** → : Shows the setting values of previous experiments.

**Working History** → : Shows the work files of previous experiments.

## 4. Run Setup Button

The button for showing Run Setup screen as  shown in .

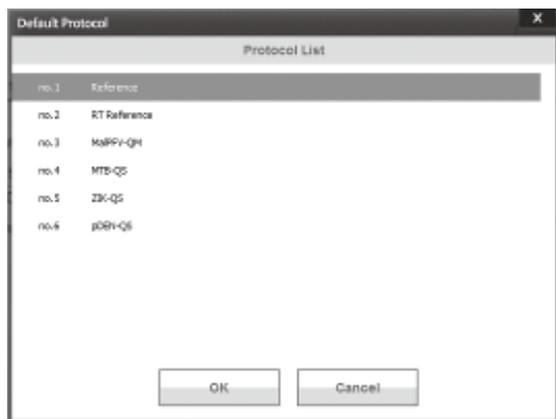
## 4-2-2. PCR Protocol Setting



<Figure 4> QD-P100 rtPCR Protocol Setting Screen

1. Default Protocol

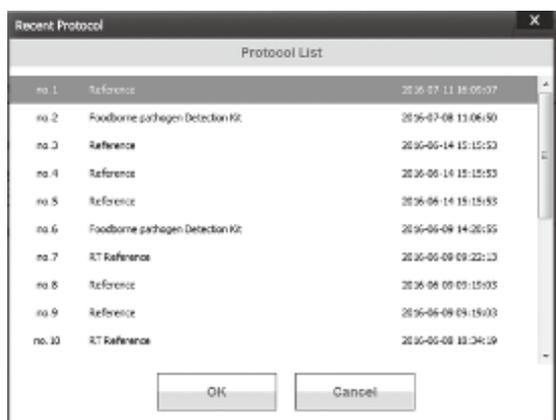
QD-P100 basically provides 6 Protocols. You can select and use a desired Protocol out of Protocol Type as shown in <Figure 4>.



<Figure 5> Default Protocol List Pop-up Window

2. Recent Protocol

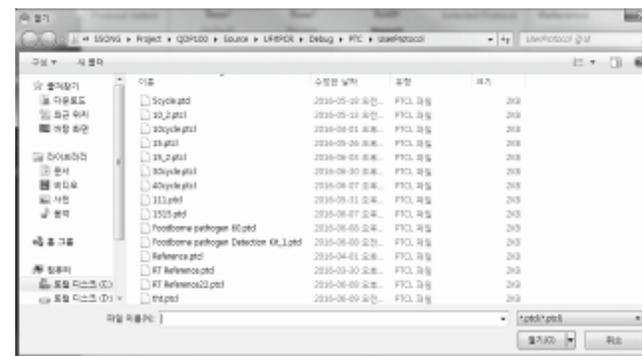
It shows the pop-up window of the list of Protocols used in recent experiments, and you can select and use the desired Protocol.



<Figure 6> Recent Protocol List Pop-up Window

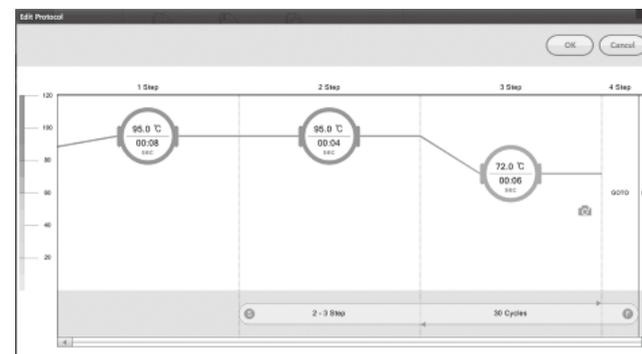
3. Import Protocol

You can import and use the Protocol files saved in the PC. The extension of the Protocol file is .ptcl.



<Figure 7> Pop-up Window for Importing Protocol Files

4. Create / Edit Protocol



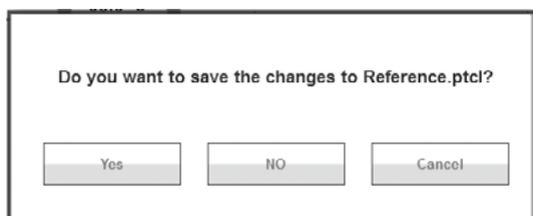
<Figure 8> Edit Protocol Pop-up Window

You can set temperature by section, holding time, and the number of other working cycle. The temperature can be set within the range from 45 to 100°C. Time can be freely entered, and the number of Cycle can be set within the range from 5 to 100 Cycle.

	Minimum value	Maximum value
Temperature	45	100
Cycle	5	100
Time	1 second	18 hours

5. Save Protocol File

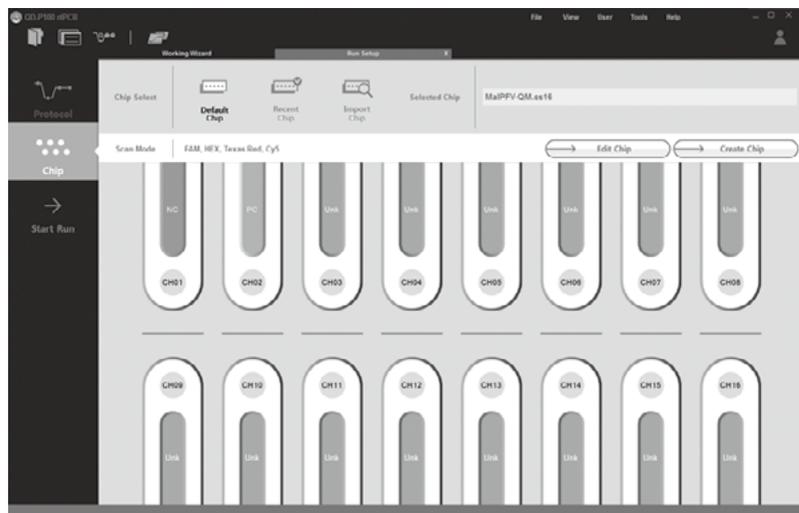
If you press “OK” button in the edit / create pop-up window after finishing all setting on the Protocol, a pop-up window as shown in <Figure 9> appears. If you press “yes,” the set protocol can be saved as a file.



<Figure 9> Pop-up window asking whether or not to save Protocol

**4.3. PCR Chip Setting**

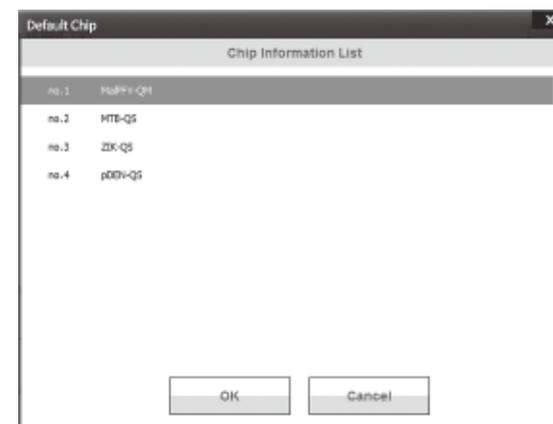
QD-P100 is supporting 4 types of fluorescence. In the Chip Setting, you can set the desired fluorescence, target name, sample name, and graph color, etc. of each channel .



<Figure 10> QD-P100 rtPCR Chip Setting Screen

**4-3-1. Default Chip**

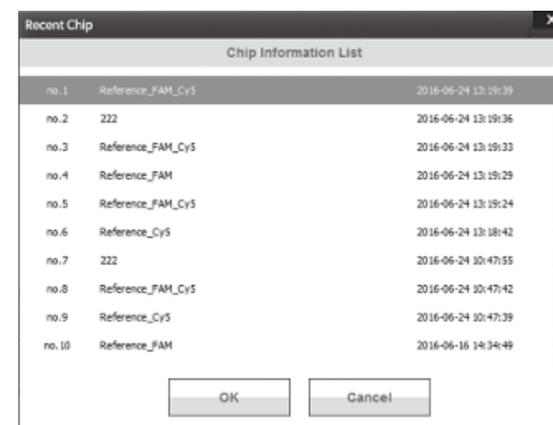
QD-P100 basically provides 3 Chip Settings. (FAM, Cy5 and FAM-Cy5) You can select and use the desired Chip Setup as shown in <Figure 11>.



<Figure 11> Default Chip List Pop-up Window

**4-3-2. Recent Chip**

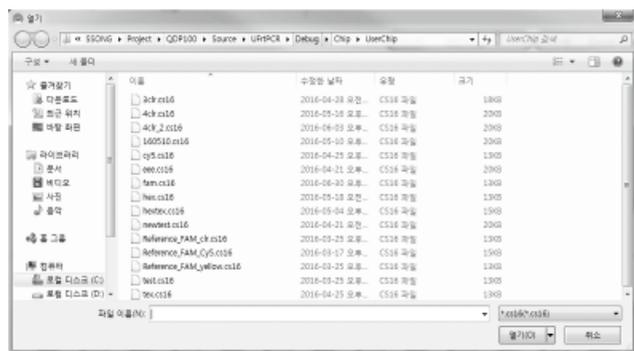
You can use the Chip Setting used in a recent experiment. You can select and use the desired Chip Setup as shown in <Figure 12>.



<Figure 12> Recent Chip List Pop-up Window

### 4-3-3. Import Protocol

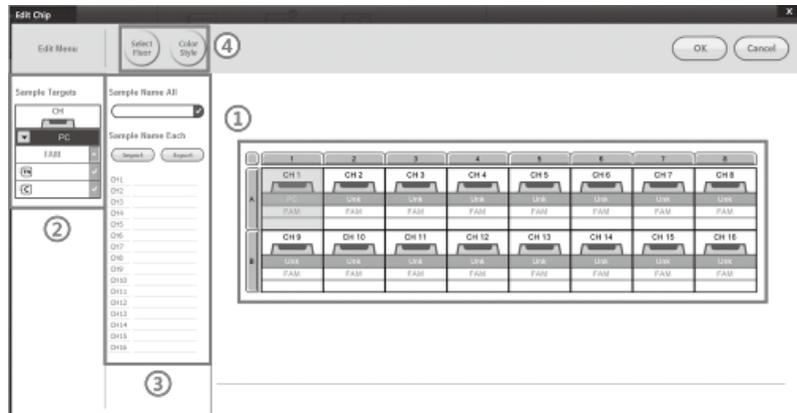
You can import and use the Chip Setting file saved in a PC. The extension of Chip Setting file is .cs16.



<Figure 13> Pop-up window for importing Chip Setting file

### 4-3-4. Edit / Create Protocol

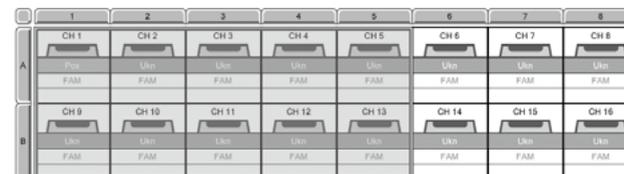
The user can edit and create Chip Setting and use it as shown in <Figure 14>.



<Figure 14> QD-P100 rtPCR Edit Chip Pop-up Screen

#### 1. Chip Setting View

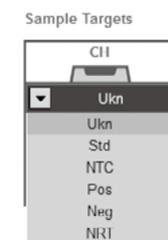
This is a table showing the information on customized fluorescence, target name, etc. Furthermore, you can select the channel for applying chip setting by dragging or using a grey button as shown in <Figure 15> before setting the chip. In addition, if you select with the mouse while pressing "Ctrl" key, multiple selection can be made.



<Figure 15> Condition of selecting multiple channels in Chip View

#### 2. Sample Targets

You can set sample target type, name, and concentration regarding channels.



<Figure 16> Combo Box for selecting Sample Target Type

If you select a Combo box, you can select one of the various type of sample target type.



<Figure 17> Edit Box for entering target name

If the desired target name is entered and enter key is pressed or check button is pressed, it sets the value as entered.

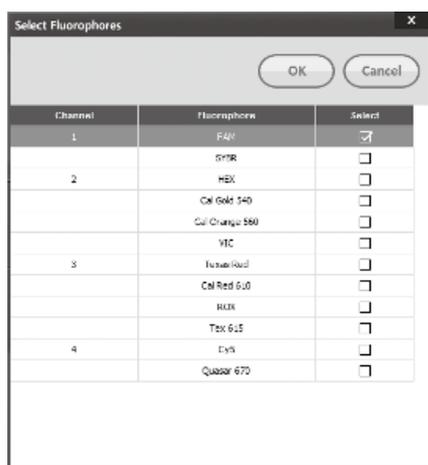
### 3. Sample Name

The user can set the sample name for each channel. "Sample Name All" can set all sample name value of the selected channel, and "Sample Name Each" can set the sample name for each channel. In addition, you can save or import the set sample name as a file.

### 4. Select Fluorescence & Color

The user can select up to 4 desired fluorophores, and can set the graph color for every channel.

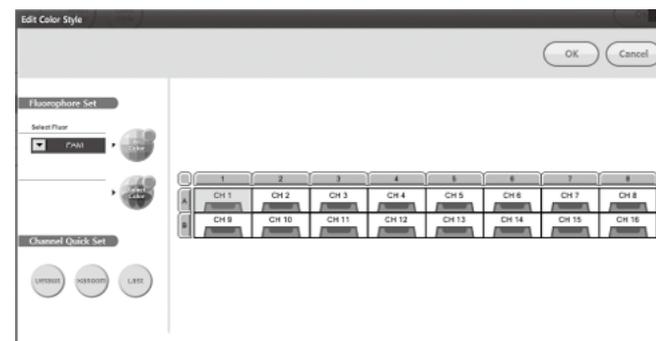
#### - Select Fluorescence



<Figure 18> Pop-up window for selecting Fluorescence Type

If "Select Fluor" button is pressed, a pop-up window appears as shown in <Figure 18>. You can select up to 4 fluorophores, and can select only one of the identical fluorescence type.

#### - Select Color Style

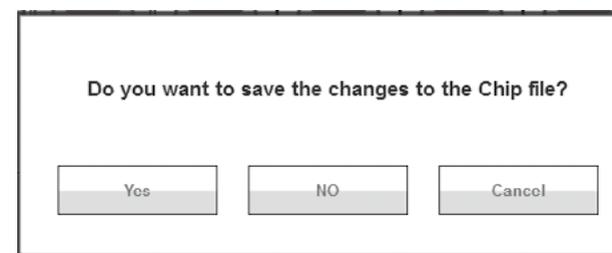


<Figure 19> Pop-up window for selecting graph color of every fluorescence type

If "Color Style" button is pressed, a pop-up window appears as shown in <Figure 19>. You can set the graph color by channel according to each fluorescence type "Default" button sets the basic color of each fluorescence type. "Random" button sets the color of each channel as a random color. "Last" button sets the graph color used in the most recent experiment.

### 5. Chip Setting Save

If "OK" button in <Figure 14> is pressed after finishing all settings on the chip, a pop-up window appears as shown in <Figure 20>. If "yes" is pressed, the set chip setting can be saved as a file.



<Figure 20> Pop-up window asking whether or not to save Chip Setting file

## 4.4. Operation

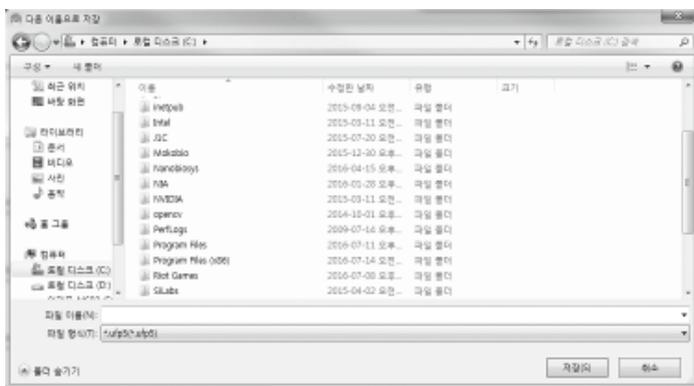


<Figure 21> QD-P100 rtPCR Start Run Screen

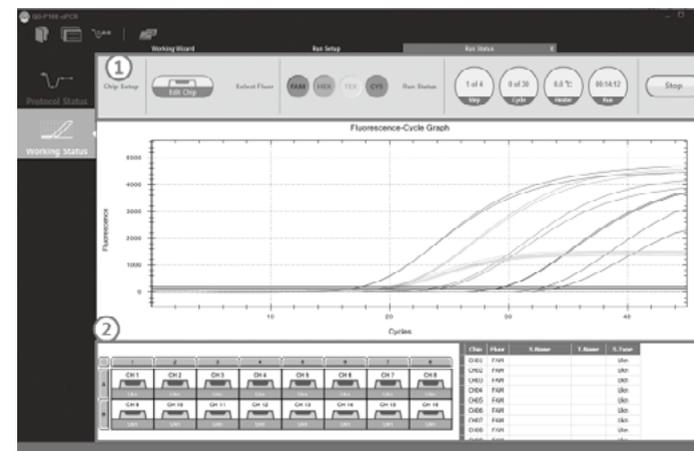
### 4-4-1. Run Information

<Figure 21> shows all setting values set by the user. QD-P100 is applying only 16 channels. In "Notes," the user can prepare the content the user want to make a memo of.

If "Start Run" button is pressed, a pop-up window appears as shown in <Figure 22>. If the result file is set in a desired location and then, the file name is set, and "Save" button is pressed, Run begins as shown in <Figure 23>.



<Figure 22> Pop-up window for saving result file



<Figure 23> QD-P100 rtPCR Working Status Screen

### 4-4-2. Working Status

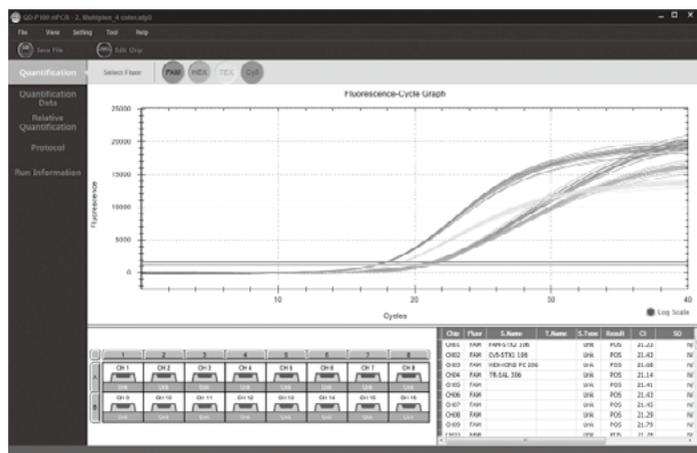
#### 1. Chip Setup & Run Status

The setting on a chip can be modified even during an experiment. However, the type and quantity of fluorescence cannot be modified. If "Select Fluor" button is pressed, the graph of the relevant fluorescence can be hidden or shown. "Run Status" displays the current step, cycle, temperature, and remaining time. If "Stop" button is pressed, it stops the current experiment in progress.

#### 2. Chip View & Chart

The red box area (2) of <Figure 23> shows the information on a channel. If Chip view is selected, it hides or shows the graph of the selected channel. Furthermore, the graph of the channel where a mouse point is located grows bold, and even the information on the relevant channel grows bold.

## 4-5. Data Analysis



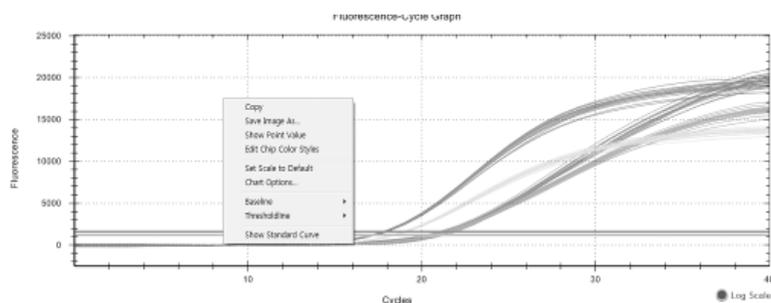
<Figure 24> QD-P100 rtPCR Working Data Analysis Screen

### 4-5-1. Quantification

A screen on experiment results is displayed as shown in "Run Status." You can check the CT values in the table on the lower right corner. If CT values cannot be found, it will be indicated as 0.00.

#### 1. Image Copy & Save

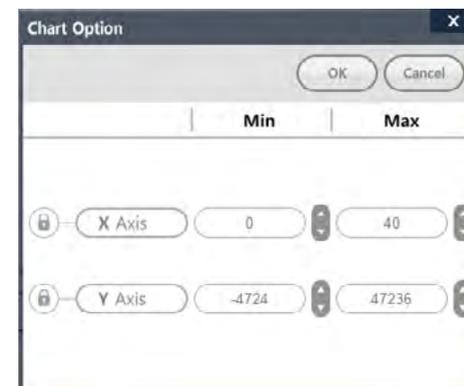
If you right-click the mouse in the graph area, a small menu screen appears as shown in <Figure 25>. If "Copy" is pressed, the current graph is copied, and if "Save Image As.." is pressed, the graph image is saved on the PC.



<Figure 25> Graph Copy and File Save

#### 2. Chart Option

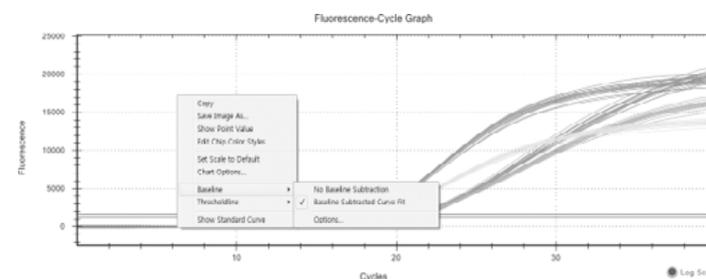
If you right-click the mouse in the graph area and press "Chart Option," a pop-up window appears as shown in <Figure 26>. This is a function for adjusting the value of x-axis and y-axis of the graph. If you click the padlock button, input value will be activated, and thus you will be able to set the desired values.



<Figure 26> Pop-up window for setting x-axis and y-axis of graph

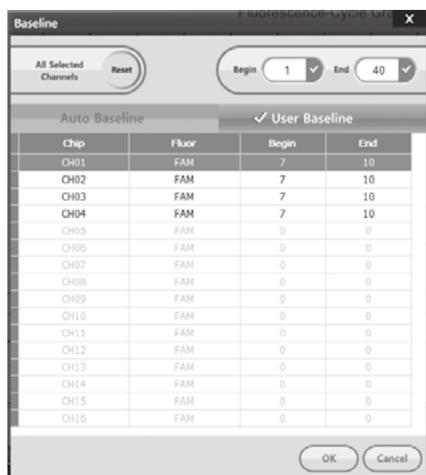
#### 3. Baseline Option

If you right-click the mouse on the graph area and view the submenu of "Baseline," there are 3 functions. If "No Baseline Subtraction" is selected, an unfitted graph appears, and if "Baseline Subtracted Curve Fit" is selected, a fitted graph appears.



<Figure 27> Baseline Setting

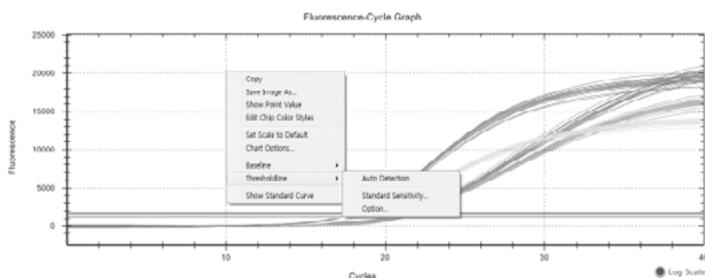
And if "Options..." is selected, a pop-up window appears as shown in <Figure 28>. Since this pop-up box can set a single fluorescence, it can activate only one fluorescence button. "Reset" button is for resetting auto baseline with the setting values. In the "User Baseline" tab, the user can directly set the baseline. If "OK" button is pressed, the baseline set by the user is applied.



<Figure 28> Auto/User Baseline Setting Pop-up Window

#### 4. Threshold line Option

If you right-click the mouse on the graph area and view the submenu of "Thresholdline," there are 2 functions. "Auto Detection" automatically searches the threshold line.



<Figure 29> Threshold line Setting

"Standard Sensitivity..." and "Option..." displays a pop-up window as shown in <Figure 30>.

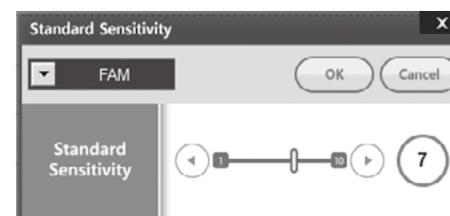
**Threshold Value:** It shows the threshold value of the current fluorescent graph.

**Start Cycle:** It can measure the CT from after the desired cycle.

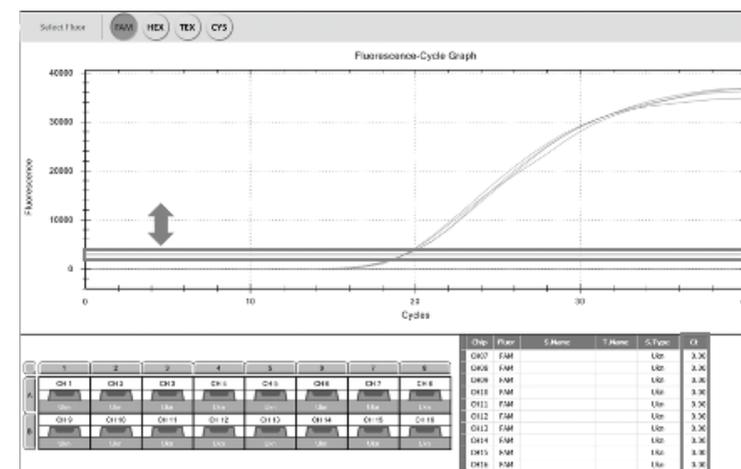
**Standard Sensitivity:** If the amplification factor of the graph is small, it can be adjusted to activate "CT Detect."

**Visible:** It can show or hide the threshold of the current fluorescence.

**Color:** It can modify the threshold color of the current fluorescence.



<Figure 30> Pop-up window for setting Standard sensitivity and Threshold line

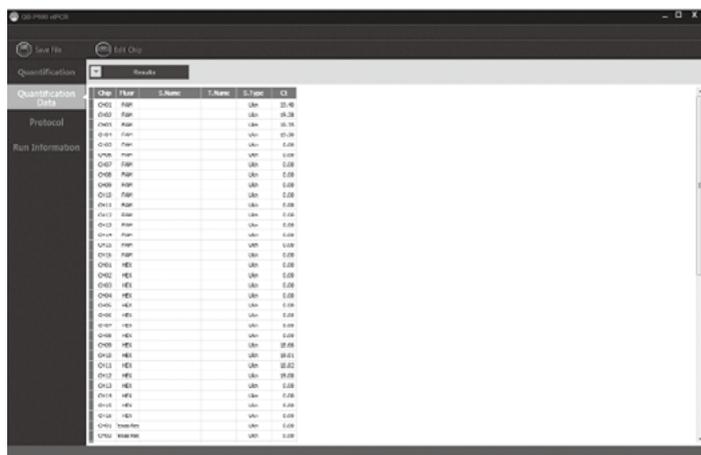


<Figure 31> Screen for setting Threshold line in graph using mouse

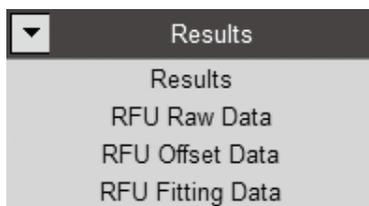
And if you bring the mouse to the threshold line as shown in <Figure 31>, the mouse pointer image changes, and if you move the mouse up and down while holding the left button of the mouse, you can adjust the threshold line. At this time, even the CT value on the right side of the screen changes in real-time according to the movement.

#### 4-5-2. Quantification Data

In "Quantification Data" tab, you can view the information of each channel according to fluorescence type.



<Figure 32> QD-P100 rtPCR Quantification Data Screen



<Figure 33> QD-P100 rtPCR Quantification Data Screen

If Combo box is selected, the select screen drops down as shown in <Figure 33>.

**Results** : It can view CT, sample name, target name, and sample type information of all fluorescence.

**RFU Raw Data** : It can view data prior to fitting.

**RFU Offset Data** : It can view data using fitting curve.

**RFU Fitting Data** : It can view fitting data.

#### 4-5-3. Protocol Information

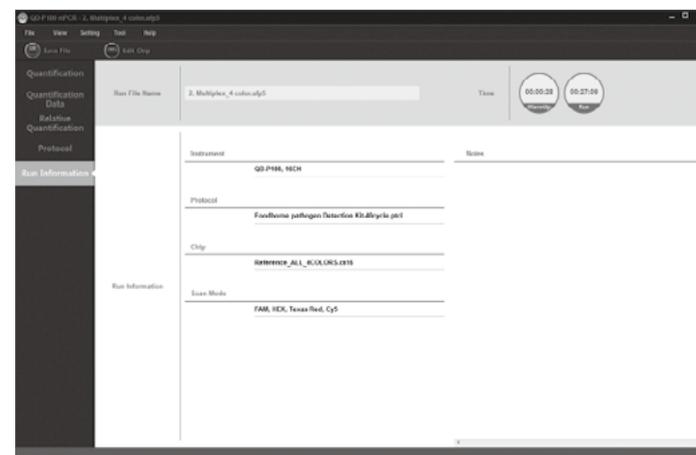
In "Protocol" tab, you can view the information of the protocol which was experimented.



<Figure 34> QD-P100 rtPCR Protocol Screen

#### 4-5-4. Run Information

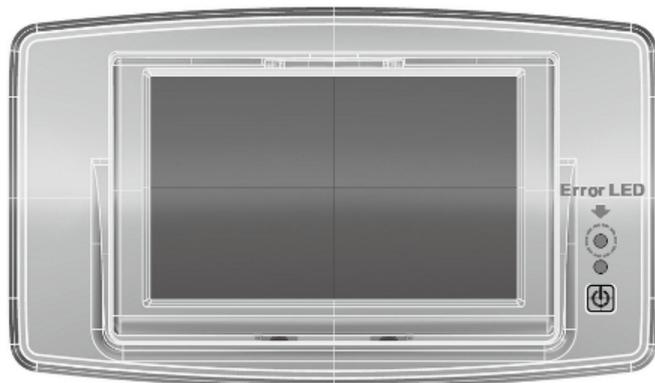
In this tab, you can view setting information used in an experiment.



<Figure 35> QD-P100 rtPCR Protocol Screen

## 5. Troubleshooting

### 5.1. Error Message



#### 5-1-1. Identifying the cause of malfunction

General malfunctions can be determined with the color of "Error LED."

	Error LED
off	Normal
white	Motor Error(init)
red	Temperature Error(run)
green	PD Error(standby)
blue	Connection Error

#### 5-1-2. User correctable malfunction

If "Error LED" lights up, restart the device and check whether "Error LED" is normal.

If the same error occurs even after restarting, you can request service through the manufacturer or dealer.

#### 5-1-3. Malfunction requiring repair

For a problem the user cannot solve (repetition of Error LED), you can request the manufacturer or dealer to provide customer services.

#### 5-1-4. When the performance of in vitro device changes

You can request the manufacturer or dealer to provide equipment upgrade or customer services.

## 5.2. Maintenance

### 5-2-1. Cleaning

1. QD-P100 does not require periodic cleaning.  
If a user wants to clean the device, please follow this guideline.
2. Turn off QD-P100
3. Gently wipe the LCD surface with a soft cloth.
4. Carefully wipe the surface of QD-P100 with a soft cloth using one of the following cleaning solutions.
  - Super sani-cloth
  - 70% Isopropyl alcohol
  - Cleanser diluted in water
5. Apply sufficient amount of cleaning product on a cloth before wiping the surface of QD-P100.
6. If the user wants to clean the inside of the device or a serious contamination has occurred, please make an inquiry to the manufacturer or dealer.

### 5-2-2. Warning

1. Do not pour liquid onto the QD-P100 device.
2. Do not spray any cleaning solution directly onto the QD-P100 device.
3. Do not place water or liquid around the QD-P100 device.
4. Do not dismantle the device.
5. Do not clean the inside of the device.

### 5-2-3. Maintenance

QD-P100 device does not require any maintenance.

If you need calibration, please make an inquiry to the manufacturer or dealer.

And If there is a change in the performance characteristics of QD-P100 device, please make an inquiry to the manufacturer or dealer.

## 6. Warranty Policy

Unless there is a separate written agreement, our product is protected from visible or invisible defect, nonfulfillment of manufacturing and materials for a period of 1 year from the date of distribution. If any damage is found at device during shipment or before using, please contact the manufacturer or dealer.

If the user intervenes without the prior written consent of the supplier, this warranty becomes void. The purchaser is responsible for consumables. All repair work carried out according to the warranty can be charged unless covered particularly by the original warranty and carried out in a country or within a designated country. The purchaser should bear in mind that repair period may be extended if import restrictions applies to a component. Deviation of material color and finish that cannot be technically avoided shall not constitute a sufficient reason for a claim. All devices are individually inspected when shipped out from the factory.

Return of a defective product can be accepted after the supplier approves of the warranty claim. The device can only be approved in their original packaging. The device should be immediately returned upon discovery of its defect. Approval of a return does not automatically constitute an acceptance of a claim.

When a complaint is accepted, the responsibility of the supplier is limited to the repair or replacement of the product or related spare parts. In any case, the purchaser cannot suspend payment or to arbitrarily deduct the term for payment without the written consent of the supplier. Our decision on all problems related to a complaint shall be final. All replaced devices shall become the property of our company.

This warranty is added to the legal or other rights of the purchaser.

## 7. Return Policy

Our goal is to provide our customer with the device of the highest quality at the lowest possible cost. Because of this, we can only accept devices wrongly delivered due to our mistake. Please receive prior approval before returning a product. If it is deemed that you are eligible for returning the product, please make an inquiry to our company within 7 days after receiving the device. The returned device must be in a shipped condition so that refund can be received.

## 8. Classification of Symbols

The packaging, the identification plate of the device, and the manual may contain the following symbols or abbreviations.

Symbol	Explanation
	For in-vitro diagnostic use
	Refer to user manual
	Electric & Electronic Equipment Waste
	Caution
	Caution - LED
	Manufacturer
	Serial number
	Catalog number
	Fragile ; handle with care

## 9. Disposal of Electrical & Electronic Equipment



The meaning of the symbol on the product, its accessory or packaging indicates that this product must not be treated as a household waste. Dispose this equipment at the applicable collection point so that electrical and electronic equipment waste can be recycled. By guaranteeing the proper disposal of this product, it will be helpful in preventing potential hazard to the environment and human health that can arise due to inappropriate waste from this product. The recycling of materials will be helpful in preserving natural resources. Therefore, please do not dispose of old electrical and electronic equipment with household waste. For further details on the recycling of this product, please make an inquiry to the local city office, household waste processing service or the store where the product was purchased.

## 10. EMC & Safety Test Results

The system satisfies the EU safety test and EMC test requirements (IEC 61010-1:2010, EN 61326-1:2013).

This equipment complies with EN 61326-1:2013, EN 61326-2-6:2006 Class A requirements and the emission of used energy is low and not likely to cause interference to nearby electronic equipment.

This device was tested for immunity to electrostatic discharge at the test level 2kV, 4kV, and 8kV.

The equipment was tested for immunity to radio frequency interference at the frequency of 80 MHz to 1.0 GHz and test level 3V/m.

The equipment was tested for immunity to radio frequency interference at the frequency of 1.4 GHz to 2.0 GHz and test level 3V/m.

The equipment was tested for immunity to radio frequency interference at the frequency of 2.0GHz to 2.7GHz and test level 1V/m.

This equipment complies with IEC 61010-1("Safety requirements on electrical equipment for measurement, control and laboratory use; General requirement"), and was in perfect safety conditions upon leaving the factory. The user is responsible for the installation, use, and maintenance of QD-P100.

## 11. Purchase of Reagents and Consumables

### 11-1. Consumables

LabChip must use only QD-P100 product manufactured by MiCoBioMed.

Please check the homepage for purchase detail information (<http://micobiomed.com/>)

### 11-2. Reagents

Only PCR Kits optimized for QD-P100 equipment manufactured by MiCoBioMed must be used.

Please check the homepage for purchase detail information (<http://micobiomed.com/>)

Date of Preparation: Feb. 2020

## 12. Maintenance Checklist

### Equipment Checklist (QD-P100)

#### 1. Daily Checklist

Checklist	Pass	Fail
The equipment is in the designated location.	<input type="checkbox"/>	<input type="checkbox"/>
No foreign objects or leaks can be found around the equipment.	<input type="checkbox"/>	<input type="checkbox"/>
The device is not exposed to direct sunlight.	<input type="checkbox"/>	<input type="checkbox"/>
There are no installations that can cause dust, heat, and fluid inflow into the equipment.	<input type="checkbox"/>	<input type="checkbox"/>
The power cord and adapter connector are plugged securely.	<input type="checkbox"/>	<input type="checkbox"/>
The chip case door is closed.	<input type="checkbox"/>	<input type="checkbox"/>
There is no object on the equipment that can cause LCD damage.	<input type="checkbox"/>	<input type="checkbox"/>

※ For any failed items, contact the equipment manager.

#### 2. Monthly Checklist

Checklist	Pass	Fail
Normal operation has been checked by turning on the power switch with the power cable plugged in.	<input type="checkbox"/>	<input type="checkbox"/>
The network connection status has been checked by connecting the USB cable to the laptop and rebooting the equipment.	<input type="checkbox"/>	<input type="checkbox"/>
The RUN LED lights up in green.	<input type="checkbox"/>	<input type="checkbox"/>
The operation status has been checked by pressing the CHIP IN/OUT button.	<input type="checkbox"/>	<input type="checkbox"/>

※ For any failed items, contact the manufacturer.

#### 3. Quarterly Checklist

Checklist	Pass	Fail
The weekly checklist has been completed.	<input type="checkbox"/>	<input type="checkbox"/>
The operation status has been checked by pressing the RUN START button after inserting a blank chip.	<input type="checkbox"/>	<input type="checkbox"/>
The data imported from the laptop after the PRE RUN are complete.	<input type="checkbox"/>	<input type="checkbox"/>

※ For any failed items, contact the manufacturer.

#### 4. Annual Checklist

Checklist	Pass	Fail
The quarterly checklist has been completed.	<input type="checkbox"/>	<input type="checkbox"/>

※ For any failed items, contact the manufacturer.

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# PCR 316 QD-P100

## User Manual

Apr. 2020



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