

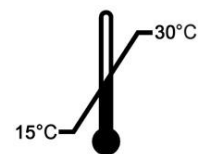
User's Guide



Exicycler[™] 96 Real-Time Quantitative Thermal Block

REF

A-2060-1



IVD

Real-time Quantitative Thermal Block

***Exicycler™* 96**

Real-time Quantitative Thermal Block

User's Guide

Version No.: 1.2 (2016-12)

Please read all the information in booklet before using the unit



Bioneer Corporation
8-11, Munpyeongseo-ro, Daedeok-gu,
Daejeon, 34302, Republic of Korea
Tel: +82-42-930-8777
Fax: +82-42-930-8688
Email: sales@bioneer.com
www.bioneer.com

Exicycler™ is a trademark of Bioneer Corporation.
Copyright 2016. Bioneer Corporation. All Rights Reserved.



U.S. and Canadian Safety Standards

Standard for Electrical equipment for measurement, control and laboratory use;

Part1: General Requirements,

UL 61010-1, 2nd Ed, Rev., October 28, 2008&CAN/CSA-C22. 2 No. 61010-1-04(R2009)

Part 2: Particular Requirements for Automatic and Semi-Automatic Laboratory Equipment for Analysis and Other Purposes,

CAN/CSA-C22. 2 No. 61010-2-081:04

Part 2-010: Particular Requirements for Laboratory Equipment for the Heating of Materials

CAN/CSA-C22.2 NO. 61010-2-010-04

Part 2: Particular requirements for in vitro diagnostic (IVD) medical equipment,

CAN/CSA-C22. 2 No. 61010-2-101:04

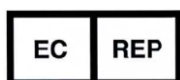


MANUFACTURER



: Bioneer Corporation
8-11, Munpyeongseo-ro, Daedeok-gu, Daejeon, 34302
Republic of Korea

EUROPEAN REPRESENTATIVE



: MT Promedt Consulting GmbH
Altenhofstr. 80
D-66386 St. Ingbert, Germany

PRODUCT

: *Exicycler™ 96*
Realtime Quantitative Thermal Block

CATALOG NO.



A-2060-1

Contents

Before Starting	1
How to Use This Guide	2
Symbols on <i>Exicycler</i> ™ 96.....	4
Safety Instructions	5
Safety Warnings and Cautions	6
Location Consideration and Installation	6
Operation and Maintenance	8
Introduction	9
Overview	10
Intended purpose	10
System Components and Specifications	11
Overview	12
System Components.....	12
Specifications	13
System Views.....	15
Installation and System Operation.....	16
Overview	17
Site Requirements	17
Required Materials.....	17
Unpacking <i>Exicycler</i> ™ 96	17
Setting Up the Computer.....	18
Connecting the Computer and <i>Exicycler</i> ™ 96.....	18
Installing the Operation and Analysis Program	19
Installing Bioneer Package	19
Installing .NET Framework 1.1 Package	22
Installing Exicycler4 Software.....	23
Troubleshooting	27

Turning On and Self-diagnosis	29
Running Real-Time PCR Using <i>Exicycler</i>™ 96 Software.....	30
Starting 'Run Exicycler4' program	31
Reagents and Consumable Products	45
Performance Maintenance.....	46
Performing System Diagnosis using ExiCfg	47
Guide to <i>AccuPower</i> ® Fluorescence test kit for calibration	49
Before Starting Calibration with the Fluorescence test kit	49
Fluorescence test plate preparation	49
Calibration using ExiCfg	51
Mask Calibration	51
Background Calibration.....	55
Multi-channel Calibration.....	57
Cleaning the main body	61
Precautions for PCR tube loading	62
Replacing Fuses	63
Returning <i>Exicycler</i> ™ 96 for Service	64
Troubleshooting	65
Ordering Information and Warranty.....	70

Before Starting

How to Use This Guide

This guide is written for researchers and laboratory staff responsible for installing and maintaining *Exicycler™* 96 Real-Time Quantitative Thermal Block.

General Requirements for Installation

This guide assumes that you:

- Are familiar with Microsoft® Windows® 7 operating system.
- Have basic techniques for handling DNA and RNA samples for PCR.
- Have basic skills for data storage, copying and pasting data into hard drives.
- Have an experience in setting up a network. (Using any data generated by *Exicycler™* 96 requires setting up a network.)

Word Conventions

- Bold signifies user action such as typing a text or clicking a button. For example:
Type **Test** and click **OK** to move to the next step.
- *Italic* represents important words or sentences and is also used for emphasis. For example:
After analysis, you must save data using Save As.
- A right arrow in bold (>) separates consecutive commands you selected from a main menu or shortcut menu. For example:
File> Config> Scan

How to Obtain More Information

For more information about *Exicycler™* 96, please visit us online at www.bioneer.com.

How to Reach Customer Support

To obtain prompt customer support, please call us at +82-42-930-8777. You can also obtain technical support through www.bioneer.com (Email: exicycler-support@bioneer.com).

Product Use Limitations

- *Exicycler™* system is designed and sold for in vitro diagnostic (IVD) applications in combination with the diagnostic kits manufactured by Bioneer and labeled for diagnostic purposes. *Exicycler™* system can also be used for life science research and other laboratory purposes.
- Gradient function of *Exicycler™* 96 is not available in US, EU, Japan and Germany.
- Use of *Exicycler™* 96 is covered by U.S. patents Nos. 8,139,210, 8,427,643, and their foreign counterparts or pending patents. The purchase of these products includes a limited, non-transferable immunity from suit under the forgoing patents for using only this amount of product solely for the purchaser's own internal research. No other patent rights to use this product for any other purpose or for commercial purpose, including without limitation reporting the results of purchaser's activities for a fee or other commercial consideration, are conveyed expressly, by implication, or by estoppels. Further information on purchasing licenses may be obtained by contacting Bioneer at licensing@bioneer.com.

Safety Labels Description on *Exicycler™* 96

English	Hot surface. Note that you can hot surface temperature.
Francais	Surface chaude Faites attention à la surface chaude.
English	Do not work long hours at low temperature to Bath. We had a condensate can cause equipment malfunctions.
Francais	Ne pas utiliser le bain à basses températures pendant plusieurs heures. Risque de condensation pouvant entrainer des fonctionnements défectueux de l'équipement.
English	Door Attention Behavior. Open or close attention to when you crash and insertion.
Francais	Manipulation de la porte. Risque de blessures corporelles (pincement/écrasement) lors de l'ouverture/fermeture de la porte.
English	CRUSH HAZARD Stay clear of this area during Door operation. Injury can result if you shut your fingers in the door.
Francais	Risque d'écrasement Ne pas rester proche de la porte durant son fonctionnement. Risque d'écrasement de doigts en cas de contact avec la porte.

Symbols on Exicycler™ 96

Safety Symbols on Exicycler™ 96

The following table describes the safety symbols that may be displayed on Exicycler™ 96. Each symbol may appear by itself or with text that explains the relevant hazard.



Hot surface.
Note that you can hot surface temperature.



Do not work long hours at low temperature to Bath.
We had a condensate can cause equipment malfunctions.



Door Attention Behavior.
Open or close attention to when you crash and insertion.



CRUSH HAZARD
Stay clear of this area during Door operation.
Injury can result if you shut your fingers in the door.

Electrical Symbols on Exicycler™ 96

The following table describes the electrical symbols that may be displayed on Exicycler™ 96.



Indicates **On** position of the main power switch.



Indicates **Off** position of the main power switch.



Indicates a standby switch by which the instrument is switched on to the **Standby** condition.



Indicates a protective grounding terminal in the instruments that must be connected to earth ground.



Indicates a terminal that can receive or supply alternating current or voltage.



Indicates a terminal that can receive or supply alternating or direct current or voltage.

Environmental Symbols on the Exicycler™ 96

The following symbol (WEEE) applies to Exicycler™ 96 placed on the European market.



Do not dispose of Exicycler™ 96 as unsorted municipal waste.

Follow local municipal waste ordinances for proper disposal provisions to reduce environmental impact of waste from electrical and electronic instrument.





European Union customers:

Call your local European office for Bioneer instruments pick-up and recycling.

Safety Instructions

Safety Warnings and Cautions

Safety instructions in this guide book are to cover possible dangerous conditions and situations that may occur. It is your responsibility to read this guide thoroughly when installing, maintaining, or operating *Exicycler™* 96. The following safety alerts will be used in this section:

- | | |
|--|---|
|  WARNING | Hazards or dangerous actions that may result in severe injury. |
|  CAUTION | Hazards or dangerous actions that may result in minor injury or damage. |
|  WARNING | Hazards or dangerous actions that may cause a burn. |
|  DANGER | Hazards or dangerous actions that may result in electric shock. |

Location Consideration and Installation

General Instrument Safety



- 1) Check power voltage rating before connecting to the instrument and an electrical outlet. *Exicycler™* 96 is configured for 100–240VAC ($\pm 10\%$). Using AVR (Automatic Voltage Regulator) or UPS (Uninterrupted Power Supply) is recommended.
- 2) *Exicycler™* 96 must be grounded for protection against electric shock. If not, it may cause serious injury and system damage.
- 3) Do not place any objects in front of the main door of *Exicycler™* 96 that can interfere with door operation.
- 4) Leave 50 cm space between *Exicycler™* 96 and the wall for proper ventilation.
- 5) Do not install *Exicycler™* 96 in a dusty environment to prevent false operation or technical damage.
- 6) Keep *Exicycler™* 96 away from heat sources.
- 7) *Exicycler™* 96 must not be installed in an area where it is exposed to water or is humid. It may cause electric shock, a fire, or system damage.
- 8) *Exicycler™* 96 must not be installed in an area where it is exposed to combustible or flammable vapor. In case of a gas leak, open windows and let fresh air in. Do not operate any electrical switch during a gas leak. It may cause an explosion or fire.
- 9) Do not disassemble or repair *Exicycler™* 96 yourself. It may cause a fire, electric shock, and system damage. A limited warranty does not cover unauthorized alterations or damage due to abuse.

Precautions regarding the electrical environment



- 1) If the power cord is loose, do not use the instrument. Overheated power cord may result in shock or fire.
- 2) Do not operate multiple instruments out of a single wall outlet. The load may cause the instrument to overheat and lead to fire.
- 3) When plugging or unplugging the power cord from a wall outlet, make sure your hands are completely dry. Wet or moist hands may cause electric shock.
- 4) A convenient and safe power cord should be available. The power cord provided by our company should be used.
- 5) Socket outlets should be at least 1.5 m from a sink or wash basin.
- 6) Power cord should not be repaired with insulating tape. Water can still penetrate insulating tape and power cord.

- 7) If you use other power cord, it should be adequate for the electrical capacity for *Exicycler™* 96 (250V, 16A, 0.75mm², VDE).
- 8) Plugs should match the socket outlets.
- 9) Unplug the power cord from *Exicycler™* 96 when not in operation for a long period of time to prevent the possibility of fire by overheating.
- 10) *Exicycler™* 96 is equipped with a 3-conductor AC power cord that, when connected to an appropriate AC power outlet, grounds (earths) the instrument. To preserve this protection feature, do not operate the instrument from an AC power outlet that has no ground (earth) connection.
- 11) Improper fuse or high-voltage supply can damage the instrument wiring system and cause a fire. Before turning on the instrument, verify that fuses are properly installed and that the instrument voltage matches the power supply in your laboratory.
- 12) For continued protection against risk of fire, replace fuse types (250V, F10AL, 2ea) according to rating specified for the instrument.

Installation Safety



- 1) Place and install *Exicycler™* 96 away from direct sunlight.
- 2) It is recommended that you turn off the computer and unplug the power cable before connecting it to *Exicycler™* 96. If the computer is turned on while connecting, the communication port connector either in the computer or *Exicycler™* 96 may get damaged.
- 3) Make sure that the USB cable is firmly connected to *Exicycler™* 96 and the computer. Unstable connection may cause damage to the communication port connector or data transfer errors.
- 4) Built-in camera of *Exicycler™* 96 is a static-sensitive device. Pay particular attention to any cables connected to *Exicycler™* 96 to avoid static damage.

Cautions



- 1) Ensure that the power cable is clean and connect it firmly to *Exicycler™* 96.
- 2) Operate *Exicycler™* 96 in a place where the temperature is always between 15°C and 30°C. Poor performance is influenced by extreme temperature. High temperature can cause mis-operation and poor performance.
- 3) Operate the system in a place where humidity is always between 20 % and 80% with no condensation. Highly humid environment can cause corrosion of internal components and low humidity can lead to errors.
- 4) Do not place any objects behind or by the side of *Exicycler™* 96 that can interfere with ventilation and cause errors.
- 5) The internal optical components of *Exicycler™* 96 may get damaged when the instrument falls or is exposed to excessive physical shock.
- 6) Unplug the power cable from *Exicycler™* 96 when not in operation for a long period of time to prevent the possibility of fire by overheating.

Operation and Maintenance

Warnings



- 1) The system can be hazardous when misused.
- 2) Keep the 96-well thermal block area clean to prevent damage and to generate accurate experimental data.
- 3) After any Real-Time PCR runs including 'Scan' or 'Melting', allow the light source lamp to cool down for at least 10 minutes. Continuous operation without a break will reduce the lamp life span and cause errors.
- 4) Do not place a piece of paper or a plastic cover under *Exicycler*™ 96. It could cause a fire.
- 5) Do not turn off *Exicycler*™ 96 right after a Real-Time PCR run is done. Wait until the cooling fan has stopped running completely. Cooling fan remains running for about 3 minutes to cool down the lamp after each Real-Time PCR run.
- 6) Do not cover *Exicycler*™ 96 with a piece of paper or a plastic cover. This may cause a fire or failure of the system.
- 7) Set 'Power Options Properties' in the Control Panel to 'Turn off monitor', 'Turn off hard disks', 'System standby', and 'System hibernates' to 'Never'. Otherwise, data transfer between *Exicycler*™ 96 and the computer will be interrupted.

IMPORTANT:

Exicycler™ 96 should be operated in a clean condition. Contaminants, such as dust, can cause problems and reduce the life span of *Exicycler*™ 96. Please prevent dust from entering into *Exicycler*™ 96. In order to extend life span of *Exicycler*™ 96, thoroughly remove dust periodically.

Introduction

Overview

Exicycler™ 96 Real-Time Quantitative Thermal Block combines a thermal block in a special 96-well format and an innovative fluorescence detector. The detector monitors fluorescence emitted as an indicator for amplified nucleic acid product during each PCR cycle in real time.

Thermal block is built into the lower part of *Exicycler™* 96, which carries out a thermal cycling. The detector is located in the upper part of *Exicycler™* 96, which measures the fluorescence emitted from samples in the thermal block in real time and transfers data to the computer for analysis. Data transferred from the detector is analyzed with *Exicycler™* analysis Program.

Exicycler™ 96 Real-Time Quantitative Thermal Block provides a maximum ramping rate of 4.5°C/sec, and features various functions such as gradient, time increment, temperature increment, and ramp rate control for myriad applications.

Exicycler™ 96 Real-Time Quantitative Thermal Block detector consists of a light source and a detector. The light source is an energy source to excite fluorescent dyes. A short arc lamp is bright and has a long life span. A white-light source is divided into particular wavelength groups by band path filters. The band path filters in *Exicycler™* 96 covers within 475 to 690 nm and works as a set consisting of an excitation and an emission filter. Five filter sets are provided for various applications. Therefore, no additional band path filters is required. Also, Bioneer's imaging technique based on polarization of light enhances detection sensitivity for robust and reliable results. Patented (KR10-1089045, US8427643) polarizing optical apparatus mitigates the common problem of a reflection light, allowing precise quantification and target discrimination.

The detector, a highly sensitive 2D CCD camera, is highly sensitive and detects multiple fluorescence signals from a 96-well plate at once. This simultaneous detection has a great advantage over a sequential detection. This innovative detector, invented by Bioneer, reduces well-to-well variation and has minimized dye-to-dye interference, therefore providing more accurate results.

Bioneer's state-of-the-art technologies applied to *Exicycler™* 96 generate a uniform light surface over the thermal block. This allows detection of multiple fluorescent signals emitted from various dyes through the light surface and separate signals within a selective wavelength range of each dye.

Exicycler™ 96 Real-Time Quantitative Thermal Block features an auto loading function for automation reducing errors and self-diagnosis for diagnosing systematical conditions of *Exicycler™* 96 for users' convenience. *Exicycler™* 96 software is composed of three main programs.

- 1) A set up program for calibration test, diagnosis and confirmation of the instrument's information.
- 2) An operation program for creating a protocol, assigning a probe and plate, saving & displaying data while operating *Exicycler™* 96.
- 3) Analysis software that comes with *Exicycler™* 96 has 4 different tools. The analysis program includes Absolute Quantification, Relative Quantification, SNP genotyping, and Existence / Non-existence. It is applicable to Gene expression, Quantification of cell and virus, and SNP genotyping.

Intended purpose

This device is used for the qualitative or quantitative analysis of specific DNA/RNA in samples.

System Components and Specifications

Overview

Exicycler™ 96 Real-time Quantitative Thermal Block is warranted by Bioneer against manufacturing defects in materials and workmanship for a limited warranty period of one year. Bioneer will charge for repairing products for the following conditions:

- Fault caused by the customer.
- The product is repaired after expiry of the warranty period.

Before you install *Exicycler™* 96, check shipped materials with the system component listed below:

System Components

Component Lists		Check
<i>Exicycler™</i> 96	1	<input type="checkbox"/>
USB 2.0 high speed cable	1	<input type="checkbox"/>
Power cord ¹	1	<input type="checkbox"/>
Software	1 CD	<input type="checkbox"/>
User Guide	1	<input type="checkbox"/>
96 well reaction plate	1 pack	<input type="checkbox"/>
Optical sealing tape	1 pack	<input type="checkbox"/>
Optical tape sealing applicator	1	<input type="checkbox"/>

¹ Provided according to country standard

Specifications

Physical specifications	
Dimension	355mm(W) x 540mm(D) x 470mm(H) 13.98in(W) x 21.26in(D) x 18.50in(H)
Weight	39 kg (85.99lbs)
Sample capacity/ size	Opaque White 96-well PCR Plate / 0.2ml Opaque White 8-Strip PCR Tube
Sample volume	20~100 μ l (50 μ l recommended)
Power consumption	100~240VAC, 50/60Hz, Max 800VA
Operating temperature	15~30°C (59~86°F)
Operating humidity	20~80%, no condensation
Thermo module specifications	
Method of heating / cooling	Peltier
Temperature range	4.0°C ~ 99.9°C (39.2~211.82°F)
Max ramp rate	4.5°C/sec (8.1°F/sec)
Temperature accuracy	± 0.3°C (± 0.54°F)
Temperature uniformity	± 0.3°C (± 0.54°F)
Lid temperature	90 ~ 120°C (194~248°F)
Gradient range	20 ~ 95°C (68 ~ 203°F)
Temperature differential range	1 ~ 20°C (1.8 ~ 36°F)
Temperature increment range	0.1~2.0°C (0.18~3.6°F)
Time increment range	1 sec ~ 60 sec
Ramp rate control range	1 ~ 100%
Computer specifications	
Operating system	Window7 (32-bit OS only)
Processor speed	Intel Dual Core E2160 (1.8GHz) or higher
Memory	1GB or higher
Communication port	USB 2.0 high speed
Screen resolution	1280 x 1024 or higher
Optical Part	
Light source	Short arc lamp(120W)*
Sensor	16 bit 2D CCD
Excitation Filter / Emission Filter**	5 Set

* Continuously turning on and off the lamp reduces the lamp life span.

* The lamp generates heat when it starts. Make sure that you turn off *Exicycler™* 96 when cooling fan stops running. It usually takes about 3 minutes for cooling fan to stop.

**Please refer to a chart below for more information about filter sets.

※The specifications of this product may change without notification for performance enhancement.

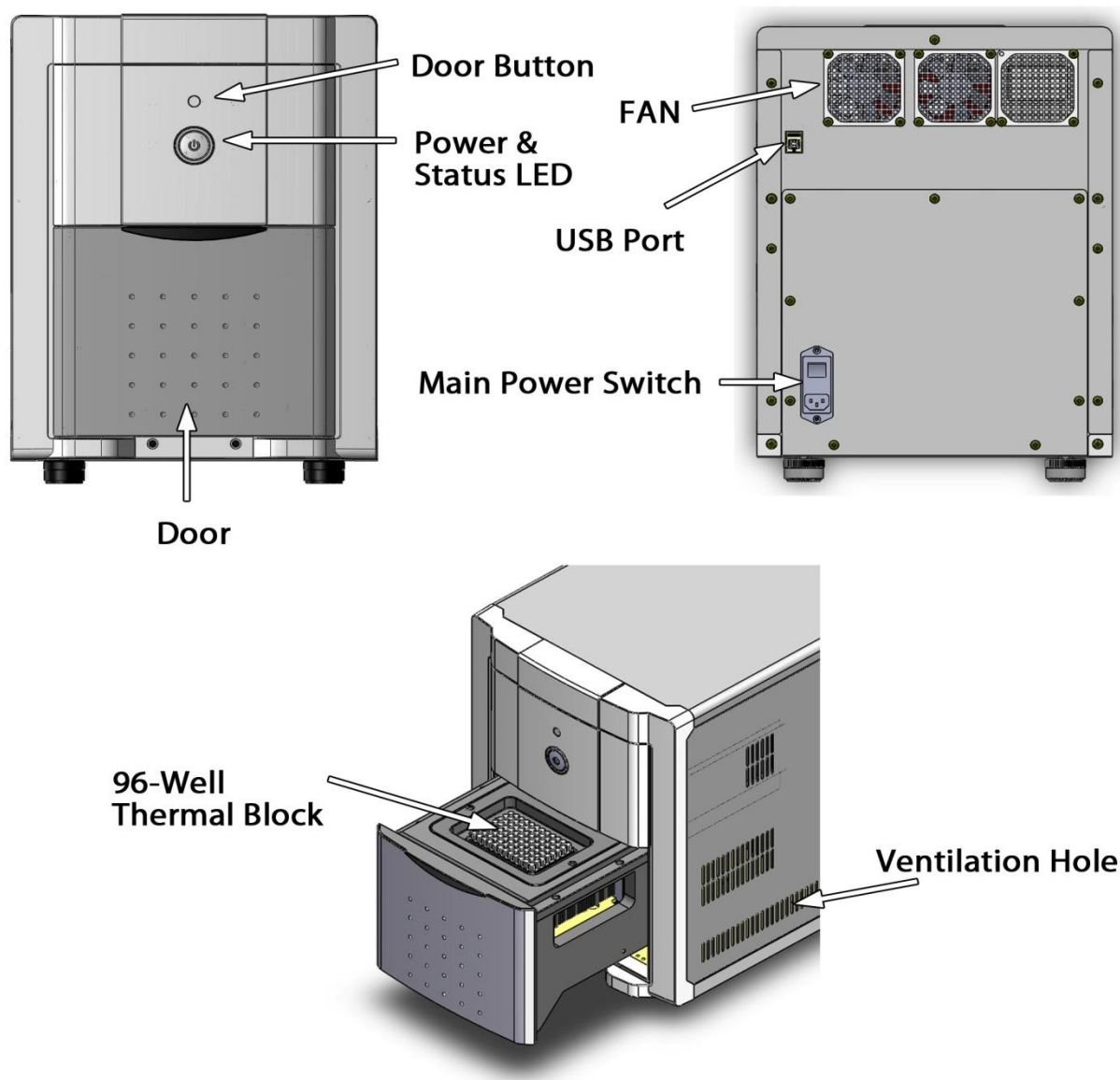
† Filter sets

Position	Excitation (nm)	Emission (nm)	Set	Fluorescent dye
1	Blank	Blank	1	–
2	475	530	1	FAM, SYBR Green I
3	520	560	1	JOE, TET
4	550	590	1	TAMRA, CY3
5	570	630	1	Texas Red, ROX, Red610
6	630	690	1	CY5, Red670



Chemical hazard: Exposure to following florescent dyes may cause eye and skin and respiratory tract irritation. Read the MSDS before use and follow the instructions if swallowed or inhaled. Wear appropriate protective eyewear, clothing, and gloves.

System Views



Installation and System Operation

Overview

To run *Exicycler*™ 96 Real-Time Quantitative Thermal Block, camera driver and operation software should be installed in a computer. When first installing the camera driver and operation software, or re-installing these components, please see below for instructions on how to install them.

Site Requirements

Exicycler™ 96 Real-Time Quantitative Thermal Block is for an indoor use. Ensure that the installation site:

- Meets the spatial and weight requirements.
- Meets environmental requirements.
- (The instrument) Is within 1.5 m (4.92 ft) of a 800VA power receptacle.
- (The computer) Is within 1.5 m (4.92 ft) of a 500VA power receptacle.
- Is away from water.

Required Materials

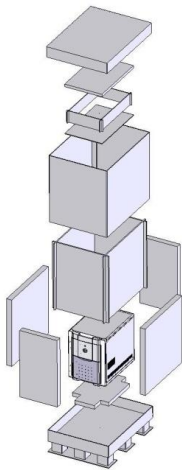
Scissors, pocket knife, or box cutter

Unpacking *Exicycler*™ 96



Save the packing materials and box in case you need to ship the instrument to Bioneer for service.

1) To unpack *Exicycler*™ 96:



- a) Cut the straps securing the instrument box.
- b) Cut the tape securing the top flaps of the instrument crate, then open the flaps.
- c) Remove *Exicycler*™ 96 accessories from the instrument and set them aside.
- d) Lift and remove the cover from the instrument crate.
- e) Remove the packing material from *Exicycler*™ 96, and then inspect the instrument for shipping damage.



If *Exicycler*™ 96 is damaged, note location and appearance of the damage, and then contact Bioneer Technical Support or your service representative.

- 2) Move *Exicycler*™ 96 to the desired installation site. Follow these guidelines for lifting and moving:
- Make sure that you have a secure, comfortable grip.
 - Keep your spine in a neutral position.
 - Bend at the knees and lift with your legs.
 - Do not lift and twist your torso at the same time.

- 3) Open the box containing *Exicycler™* 96 accessories, then verify that it contains all the necessary components:
 - Refer to Component Lists.

Setting Up the Computer

Exicycler™ 96 Real-Time Quantitative Thermal Block operates through a computer. Therefore, to install *Exicycler™* 96, a computer or a laptop is necessary. Computer must meet the following requirements listed below. Please contact Bioneer Customer Service Center if you have any questions regarding installation.

Computer Requirements

- Intel Dual Core E2160 (1.8GHz) or higher
- Windows 7 Operating System for Korean or English Version (Service pack 1 or later, 32-bit OS only)
- 1.0GB RAM or higher
- 1280 * 1024 screen resolution
- USB 2.0 high speed port
- 20GB Hard disk drive minimum
- Microsoft Excel (Option)

For questions regarding problems with the computer or operating system, please contact the computer manufacturer.

- 1) The computer must have at least one communication port for USB data transfer.
- 2) It is recommended to install an anti-virus software in order for *Exicycler™* 96 to operate safely. A firewall should also be setup to prevent unwanted information coming in from external networks. Please contact your IT department to setup anti-virus software and firewall.
- 3) It is not recommended to insert a flash drive into USB port when *Exicycler™* 96 is running. It may cause a technical problem between *Exicycler™* 96 and the computer.

Connecting the Computer and *Exicycler™* 96

There are main power connector and a communication port connector (USB) in the rear of *Exicycler™* 96. The computer should be turned off when connecting to *Exicycler™* 96 to prevent any damages to the communication port. Please see below for instructions on how to connect *Exicycler™* 96 to the computer.

- 1) Unpack *Exicycler™* 96 and make sure all components are included.
- 2) *Exicycler™* 96 must be installed in an area where it is not exposed to sunlight and must be set on a stable and level surface.
- 3) Set up the computer at the installation site.
- 4) Place *Exicycler™* 96 in the installation site carefully.
- 5) Connect USB 2.0 cable to USB connector on the back of *Exicycler™* 96, then to the computer.
- 6) Connect power cable to *Exicycler™* 96, then to the receptable wall circuit.

Installing the Operation and Analysis Program

To run *Exicycler*™ 96 Real-Time Quantitative Thermal Block, the operation software and the camera driver must be installed in the computer. When installing the operation software and the camera driver for the first time, or re-installing these components, please see instructions below on how to install them yourself. In case of running the software for only data analysis purpose, please refer to this section for software installation.

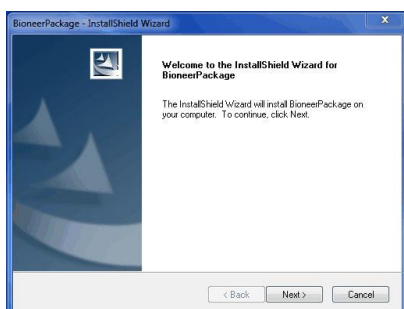
IMPORTANT:

Do not turn on *Exicycler*™96 unless you have installed the Operation and Analysis Program and a camera driver. First install the Operation Software and then the camera driver.

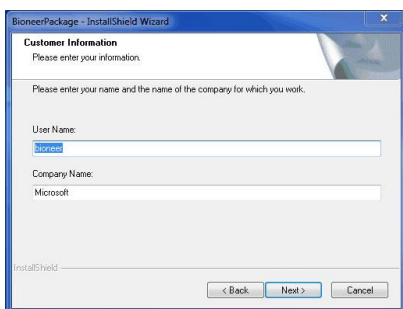
To install Bioneer Package and Exicycler4 softwares for an *Exicycler*™ 96 device under Windows 7, follow the instructions below:

- If a previous version of software has been installed on your computer, please remove the programs and folders from the computer (Refer to 'Troubleshooting, 4. The Bioneer Package is not installed correctly'). Remaining program folders may cause errors during installation. This section is for the first time installation or re-installation of the software.
- The Bioneer Package has to be installed prior to installing Exicycler4 software. The procedures of Bioneer Package installation is described below.

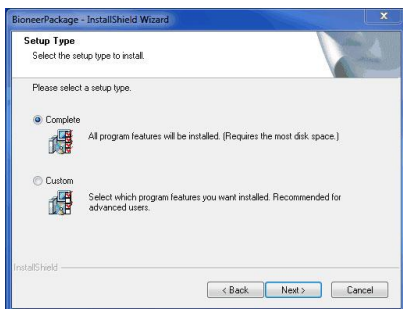
Installing Bioneer Package



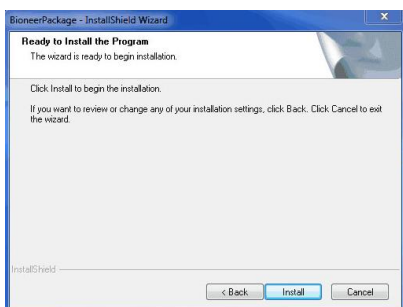
- 1) Turn on the computer, but not *Exicycler*™ 96 Real-Time PCR machine. Place *Exicycler*™ 96 installation CD into the CD-ROM. Go to 'Bioneer Package' folder in the CD drive and run **Setup.exe**.
- 2) To install Bioneer Package, click **Next**. The installation will proceed in **C:\WBioneer_Package**.



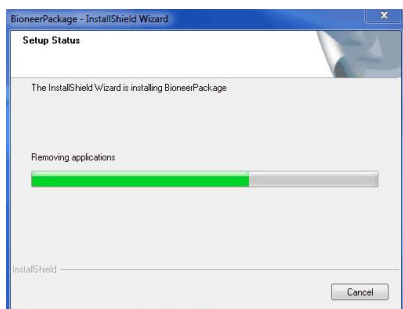
- 3) Enter desired name in the **User Name** box and **Company Name** box.



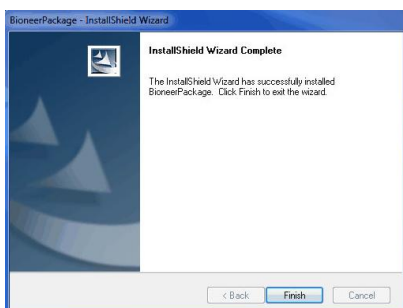
- 4) Select a setup type to install. **Complete** is recommended for installing all program features. **Custom** installation is recommended only for advanced users. Click **Next**.



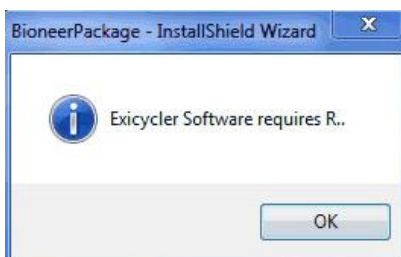
- 5) InstallWizard is ready for installation. If you want to review or modify your settings, click **Back**. Click **Install** to start installation.



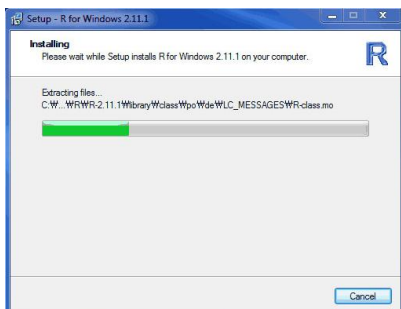
- 6) This process takes several minutes. Please do not cancel until installation is complete.



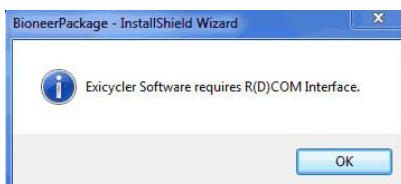
- 7) When installation is complete, please click **Finish** to finish installation Shield Wizard.



- 8) R program is also needed for *Exicycler*™ software. If you click **OK**, installation will begin.



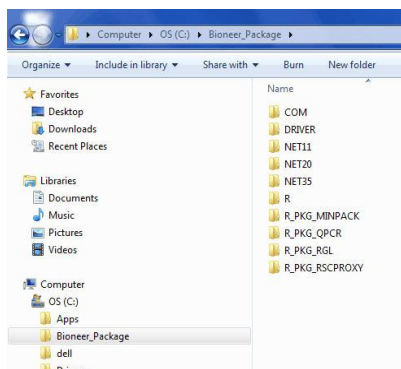
- 9) R program will be installed automatically. Please wait until installation is complete.



- 10) Click **OK** for installing R(D)COM interface.

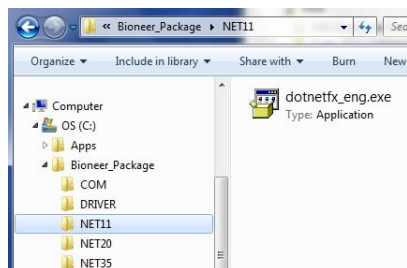


- 11) R icon will be shown on the Desktop when installation is successful.

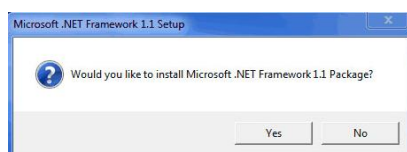


- 12) The folders shown here are created after installation has finished. Please confirm 'Bioneer_Package' and sub folders.

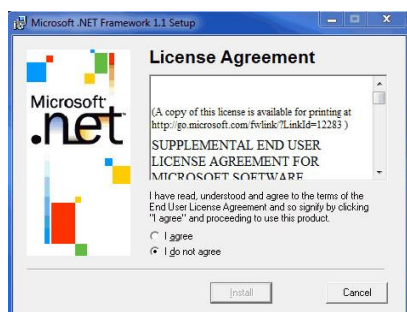
Installing .NET Framework 1.1 Package



- 1) In order to install '.NET Framework 1.1 Package', run **dotnetfx_eng.exe** file of the **C:\WBioneer_Package\WNet11** folder.



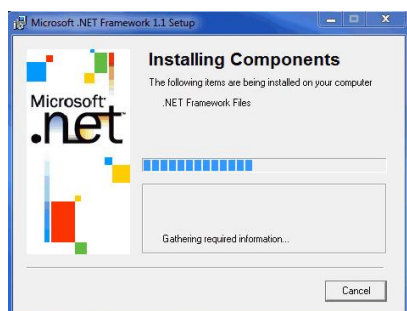
- 2) Click **Yes** for installing '.NET Framework 1.1 Package'.



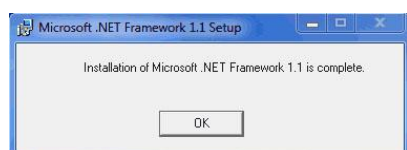
- 3) A setup window asking about the license agreement is displayed.



- 4) Select **I agree** to activate install button, Click **Install** to begin installation.



- 5) All components related to .Net Framework are being installed.



- 6) Installation of .NET Framework 1.1 is complete. Click **OK** to finish installation.

Installing Exicycler4 Software



- 1) In Exicycler4 folder of the provided CD, you can see **setup.exe** file and double click InstallShield Wizard to install required items automatically.



- 2) Click **Next** and go to the next step.



- 3) Click **Install** to begin installation. If you want to change any settings or cancel installing, click **Back** or **Cancel**.



- 4) Please wait while InstallShield Wizard installs Exicycler4.

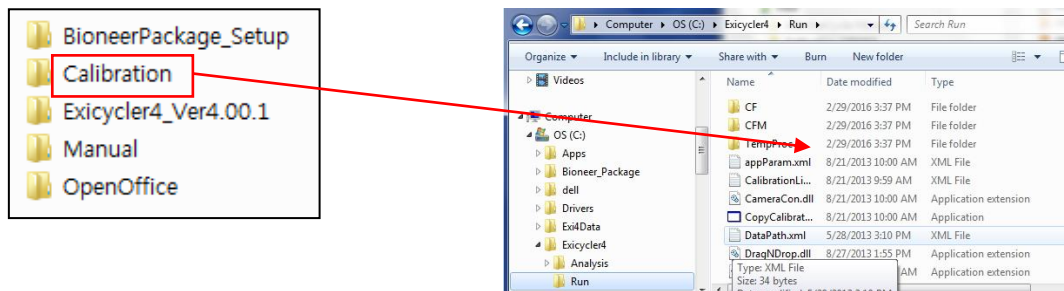


- 5) Message indicating “InstallShield has successfully installed Exicycler4.” is shown. Click **Finish** to complete installation.



- 6) On the Desktop, these icons are created when installation is completed successfully.

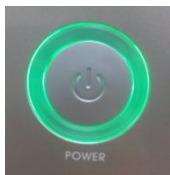
- 7) In the **C:\WExicycler4\WRun** folder, folders and files that are shown on the image (below) are created. Copy 'Calibration' folder from *Exicycler™* 96 CD into **C:\WExicycler4\WRun** folder.



- 8) Now you should connect *Exicycler™* 96 system to a computer using provided USB cable.

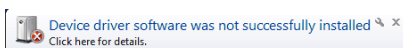


- 9) Check the USB cable connection between the *Exicycler™* 96 and the computer.

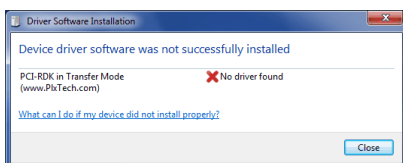


- 10) Turn on *Exicycler™* 96. The status LED will be blue when the power is supplied properly.

- 11) Press the power button for a second to start self-diagnosis. The status LED will start blinking in green after two short beeps when the self-diagnosis is complete.

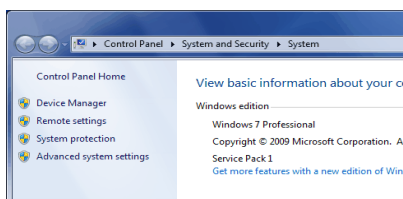


- 12) When *Exicycler™* 96 is turned on for the first time, the computer searches for a new device.

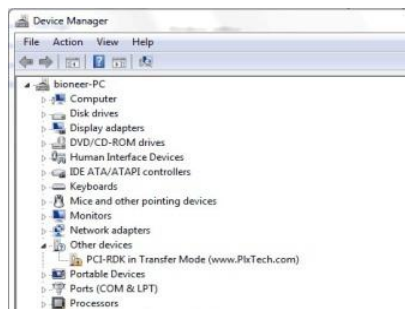


- 13) When an unsigned device is connected, the following message will be displayed. Click the message to view details.

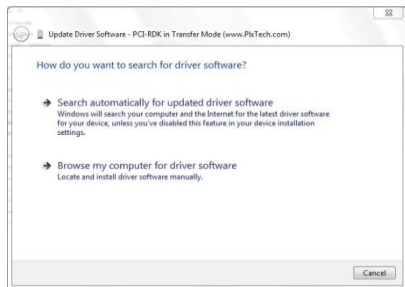
- 14) This message appears because device driver software is not installed yet. Driver must be installed in order to continue. Please click **Close**.



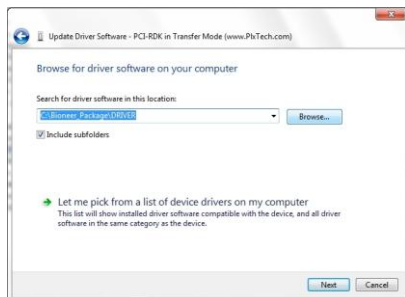
- 15) To install device driver and to confirm device status, go to **Control Panel\WSystem and Security\WSystem – Device manager**.



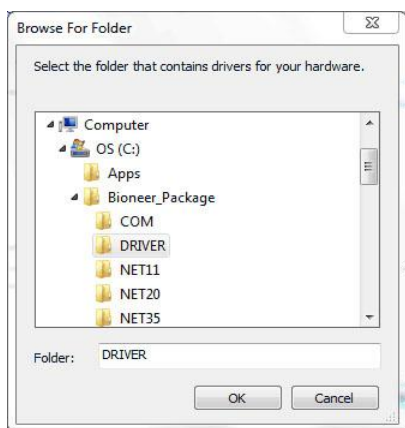
- 16) All devices connected to computer are displayed. Unsigned device is indicated with an exclamation mark. Point at this device and right-click and select **Update driver software**.



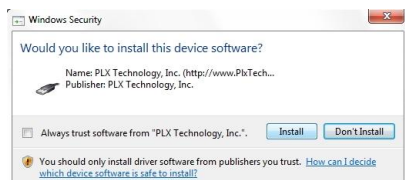
- 17) When a prompt searching for device driver is presented, select **Browse my computer for driver software**.



- 18) Click **Browse** to search for the appropriate driver software.



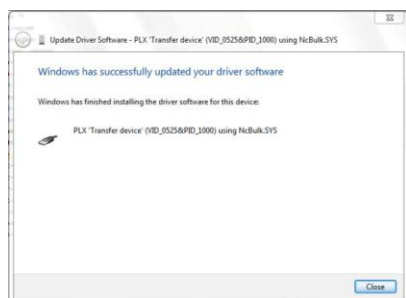
- 19) Select **C: \Bioneer_Package\driver** and click OK.



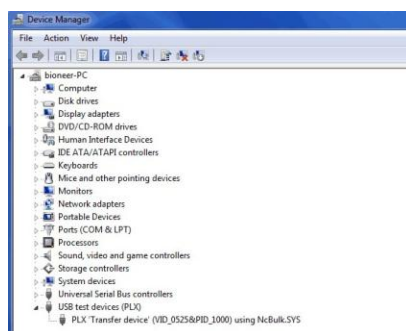
- 20) Select **Install**. Installation will start automatically.



- 21) Please wait while installing. This process takes several minutes.



22) A message indicating that the installation is successful will show when installation is complete. Click **Close** to complete installation.



23) Open 'Device Manager' and confirm that device driver has been installed. If **USB test devices (PLX) WPLX Transfer device' VID_0525&PID_1000)** using Ncbulk.SYS has been installed properly, connected USB will be indicated.

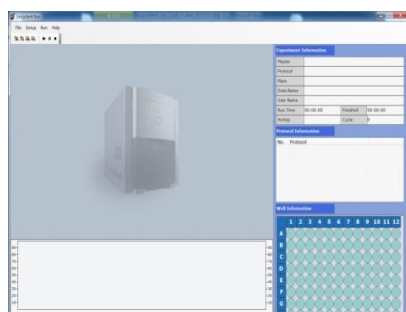


24) Click **Run Exicycler4** icon to start *Exicycler™* 96 software.



Exicycler 96 V4 4.0
Exicycler 96 V4 / Exicycler 96 V4 Fast
Run 4.00.1

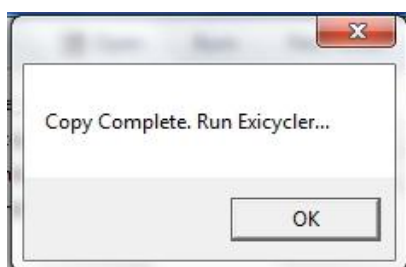
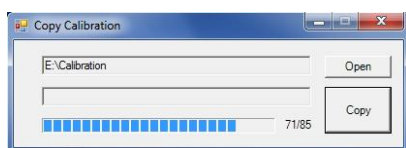
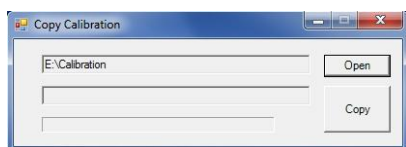
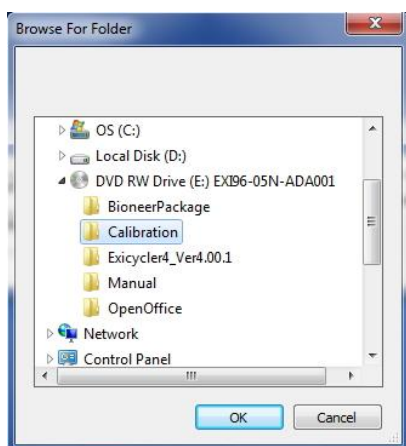
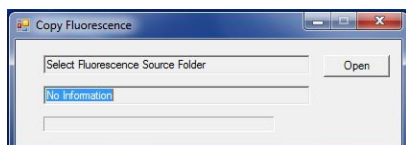
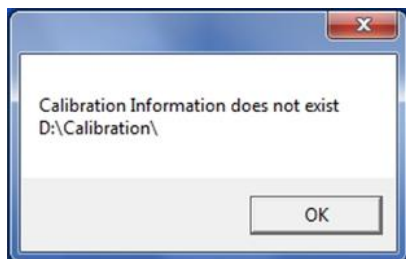
25) You can see this screen when installation is completed successfully. The software version is also indicated.



26) Now you are ready to operate *Exicycler™* 96 system .

Troubleshooting

1. Appropriate calibration data does not exist



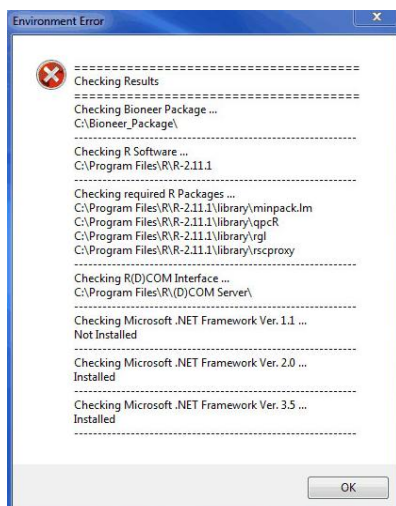
- 1) CD provided with *Exicycler*™ 96 has Calibration data for each device. Calibration data have to be copied into **C:\WExicycler4\Run** folder in order for a normal function. If Calibration folder does not exist on this path, following message will be displayed.
- 2) Click **OK** to change the path.
- 3) You should assign the path of the Calibration folder to be copied automatically. Click **Open** and you will see the following browser.
- 4) After assigning the Calibration folder (ex. **E: \WCalibration**), click **OK**.
- 5) Copy Calibration window displays the path of Calibration folder and serial number of your device. If the serial number matches with the connected *Exicycler*™ 96 system, click **Copy** button on the right hand side of window.
- 6) Please wait for a few minutes to complete.
- 7) When copying calibration folder is complete, click **OK** to finish the process. Please confirm the connection between device and computer, and restart *Exicycler4* software.

2. The computer does not register *Exicycler*™ 96 when launching 'Run Exicycler4' software.



This message means that the device is not turned on or the appropriate device driver has not yet been installed on the computer. If you see this message despite the instrument is turned on, then you should re-install the device driver to solve this problem. The driver installation steps are described in 'Installing Exicycler4 Software' section.

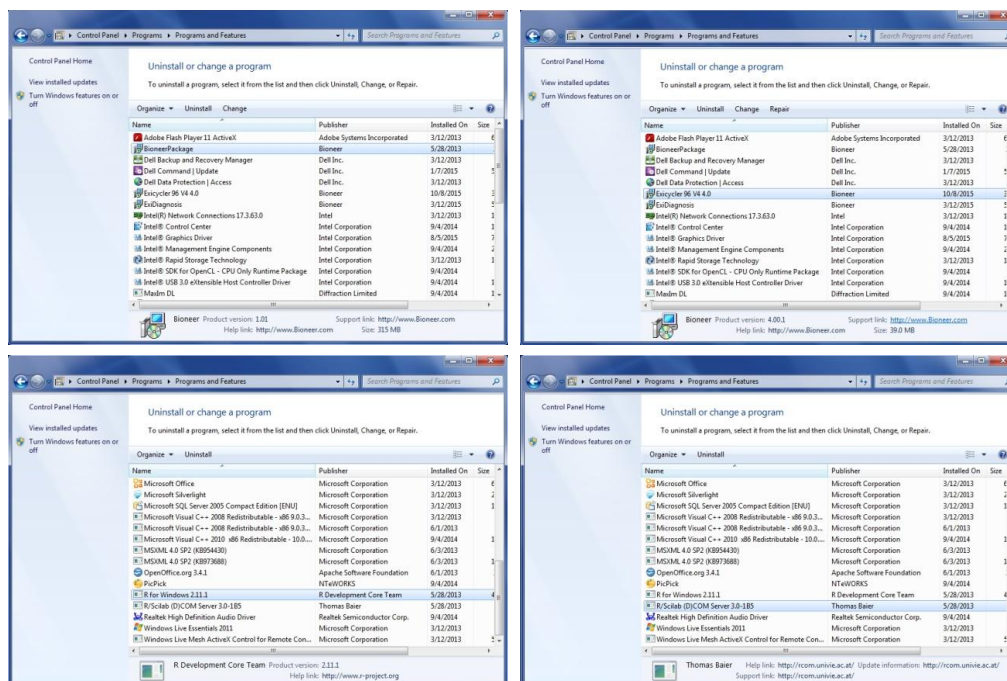
3. An Error message is displayed when lunching 'Run Exicycler4' software.



This message indicates that '.NET Framework 1.1' has not yet been installed. Go to 'Installing .NET Framework 1.1 Package' section and re-install as described.

4. The Bioneer Package is not installed correctly.

If an incorrect installation was performed previously, 'Bioneer Package' may not be installed correctly. Go to **Control Panel–Programs Add/Remove** and remove 4 programs from the computer – 'Exicycler 96 V4 4.0', 'Bioneer package', 'R for windows 2.11.1' and 'R/Scilab(D)COM Server3.01–B5'. After removing them from the computer, repeat the entire installation process.



Turning On and Self-diagnosis

- 1) Turn on *Exicycler*™ 96 by switching on the main power switch in the rear of the instrument. When power is supplied properly, a status LED turns blue.
- 2) Press the **POWER** button for a second to start self-diagnosis.
- 3) When the status LED is blinking green, you can either open or close a main door by pressing a **DOOR** button for a second. The status LED is blinking in purple when the door is open and is back to green when the door is closed.



Power Off



Power On



Door Open



Stanby

IMPORTANT:

The status LED starts blinking green after two short beeps when the self-diagnosis is complete. *Exicycler*™ 96 is now ready to operate. The status LED will turn red when the self-diagnosis fails or excessive physical shock is applied from outside. (e.g. Make sure that there are no objects placed in front of the door) Make sure that the status LED is blinking green before operating *Exicycler*™ 96 to prevent mis-operation or damage. A result of the self-diagnosis is provided under “ExiConfig”.

※ Status LED color

- a. Red: Error
- b. Blue: Standby
- c. Green: Ready for running
- d. Yellow: Self test
- e. Cyan: Running
- f. Purple: Door open
- g. White: Pause

NOTE:

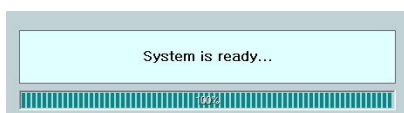
You can stop the operation here and turn off the *Exicycler*™ 96 by pressing the POWER button for a second when it is blinking in green like Step 3.



Do not place any obstacle in front of the system and do not load a plate or take it out when the door is moving. It can cause serious damage and lead to severe injury.

Running Real-Time PCR Using *Exicycler*[™] 96 Software

Starting 'Run Exicycler4' program



- 1) Ensure that *Exicycler™* 96 is in the “Standby” mode. The status LED must be blinking green. Double click **Run Exicycler4** icon on the desk top to start **Run Exicycler4**.

- 2) **System Check** window will pop up.

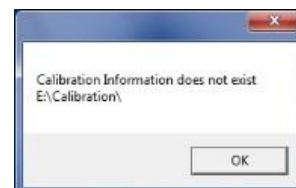
IMPORTANT:

The following error message will appear if *Exicycler™* 96 is not turned on. Turn on *Exicycler™* 96 by pressing the power switch at the back of *Exicycler™* 96 and the power button in front of *Exicycler™* 96. Then double click **Run Exicycler4** icon on the desktop again.

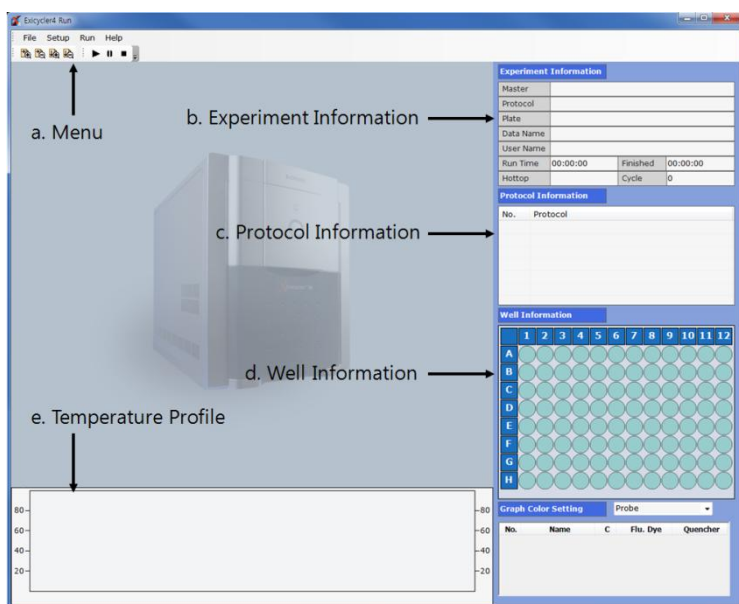


IMPORTANT:

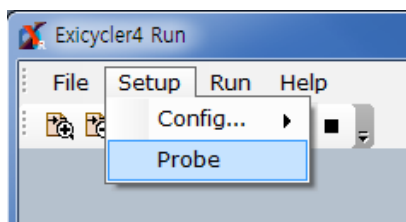
The following error message will appear when the calibration has not been performed for *Exicycler™* 96 or the calibration data is not present. Close Run Exicycler4 program and copy calibration folder into **C:\WExicycler4\Run**. (The CD provided with *Exicycler™* 96 has calibration data for each device.)



- 3) The following window will appear when System Check is complete.



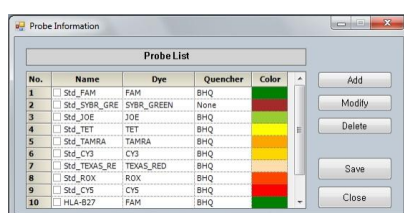
- Menu** consists of File, Setup, Run, Window, and Help.
- Experiment Information** displays file name, user name, and elapsed and estimated finish time.
- Protocol Information** displays a cycling protocol in detail.
- Well information** displays sample and probe specification for each well.
- Temperature Profile** displays a temperature curve of the cycling protocol.



- 4) Go to **Setup > Probe** from the top menu.

IMPORTANT:

9 different probe options are available in *Exicycler*™ 96. Each probe option includes specifications for a fluorescence dye and a quencher. You can either select one of existing probe options in Probe List or add your own. Ensure you specify an appropriate probe option for accurate data analysis.



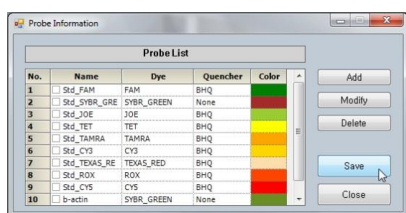
- 5) Probe Information window will appear. Select one or click **Add** to add additional probe.



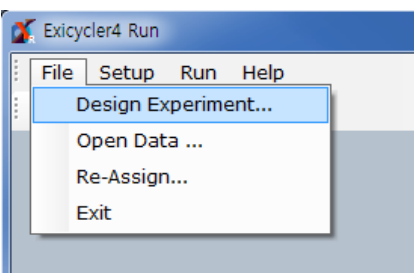
- * **Additional Probe Setting:**
ex) Enter 'b-actin' in the field

NOTE:

For example: In the **Dye** drop-down list of the **Add Probe** window, select **SYBR_Green**. Select **None** in the Quencher drop-down list. Select your desirable color for display and then click **OK**.

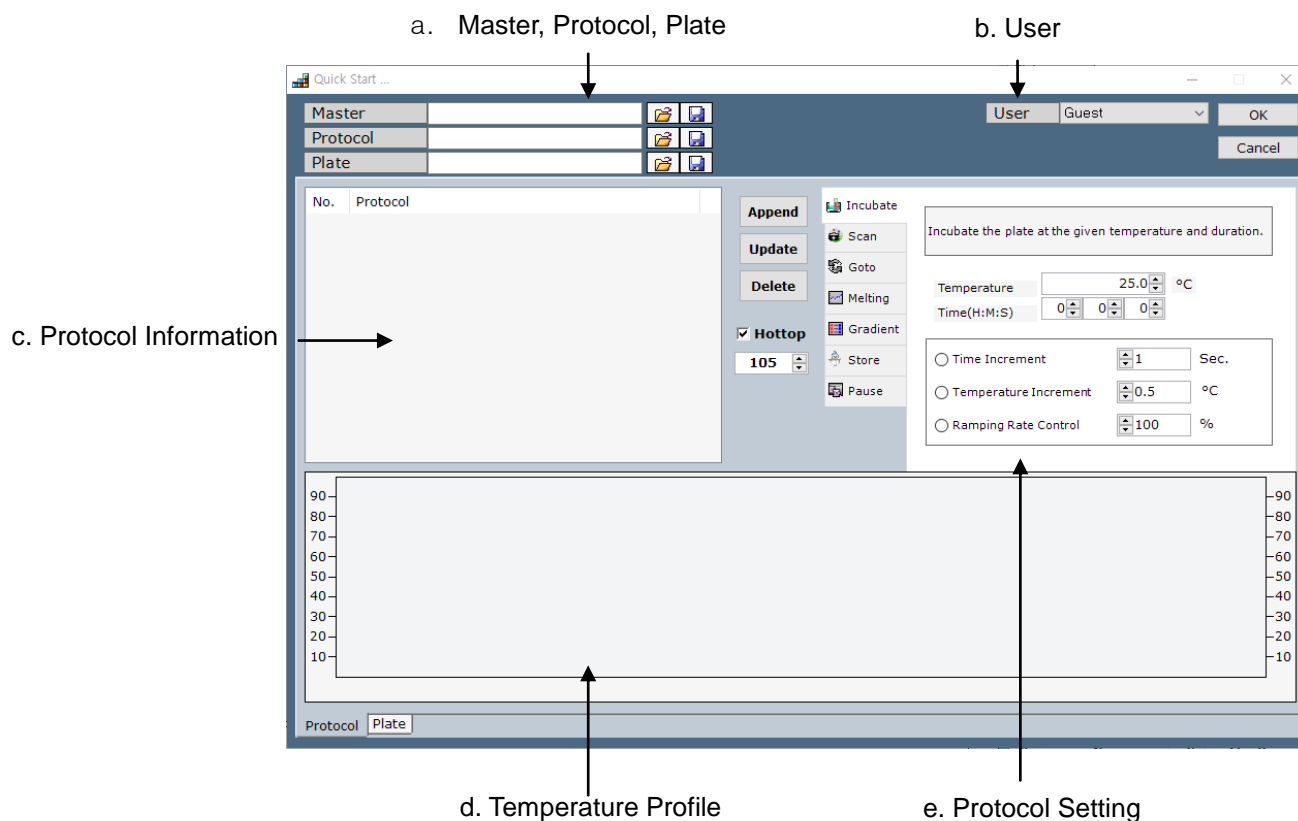


- 6) Check if your new probe is shown under the list, and then click **Save**.



- 7) Go to **File > Design Experiment** to design a new experiment.

8) Quick Start window will appear as shown below:



- a. **Master, Protocol, and Plate:** You can create, save, or open a file.
- b. **User:** Select or create the user name for personal account management.
- c. **Protocol Information:** Displays a cycling protocol in detail.
- d. **Temperature Profile:** Displays a temperate curve of the cycling protocol.
- e. **Protocol Setting:** Specifies protocol specifications such as temperature, time, and a number of cycles.

NOTE: Example of qPCR protocol

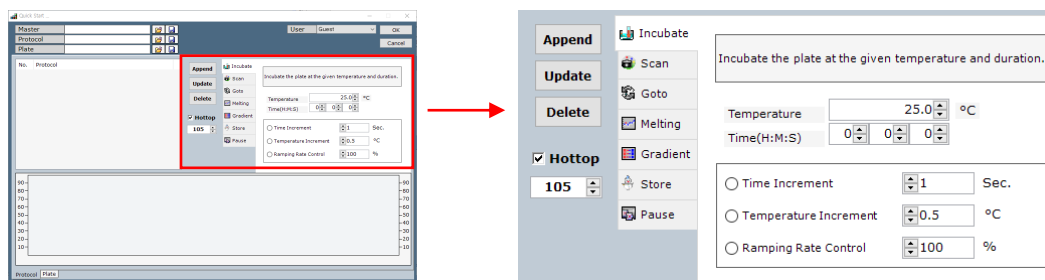
SYBR Green I

No.	Protocol
1	Incubate at 95.00°C, for 0:5:0
2	Incubate at 95.00°C, for 0:0:10
3	Incubate at 60.00°C, for 0:0:20
4	Scan
5	Goto Line : 2, Cycle : 40
6	Melting 60°C to 94°C, Every 1.0°C, 1 Sec.
7	Incubate at 25.00°C, for 0:1:30

TaqMan probe

No.	Protocol
1	Incubate at 95.00°C, for 0:5:0
2	Incubate at 95.00°C, for 0:0:10
3	Incubate at 60.00°C, for 0:0:20
4	Scan
5	Goto Line : 2, Cycle : 40
6	Incubate at 25.00°C, for 0:1:30

- 9) Click **Incubate** tab and enter a temperature in the **Temperature** field and then a time in the **Time** field.



- Incubate** sets up a temperature and a time for the thermal block.
Time Increment sets up time increment per cycle.
Temperature Increment sets up temperature increment per cycle.
Ramping Rate reduces a ramping rate.
- Scan** measures fluorescence signals emitted from samples.
- Goto** specifies a starting step of a thermal cycling and a number of cycles.
- Melting** sets up starting temperature and ending temperature for melting curve analysis to distinguish specific and nonspecific amplification products when SYBR Green is used for Real-Time PCR.
- Gradient** is used to evaluate an optimum annealing temperature condition for amplification.
- Store** keeps the 96-well thermal block at a set temperature until you stop *Exicycler*™ 96. It is not recommended to use **Store** step when it is excessively humid.
- Pause** is used to pause *Exicycler*™ 96 when it is necessary to check samples during experimentation. The door of *Exicycler*™ 96 will open when the **Pause** step is inserted in the protocol file. Click **Run** to resume the experiment.
- Hottop** sets up a temperature for the heating lid.

NOTE:

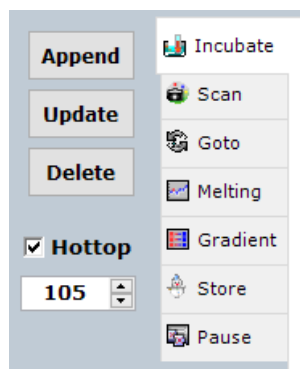
Scan is used to detect fluorescence signals from samples. The fluorescence signals are measured while maintaining the temperature of the previous incubation step. If the **Scan** step is not included in the protocol file, a conventional PCR will be carried out without scanning fluorescence signals.

Melting sets up starting and ending temperature for melting curve analysis to distinguish specific and non-specific amplification products when SYBR Green is used for Real-Time PCR. Enter starting temperature in the **From** field, ending temperature in the **To** field, a temperature interval within a range of 0.1°C to 1.0°C in the **Between** field, and a hold time within a range of 1 second to 255 seconds in the **Hold Time** field.

Gradient is used to select an optimum annealing temperature for amplification and programs a temperature gradient up to 20°C across the rows of a sample block. Enter starting temperature in the **From** field, ending temperature in the **To** field, and time within a range of 1 second to 5 hours 59 minutes and 59 seconds in the **Time** field.

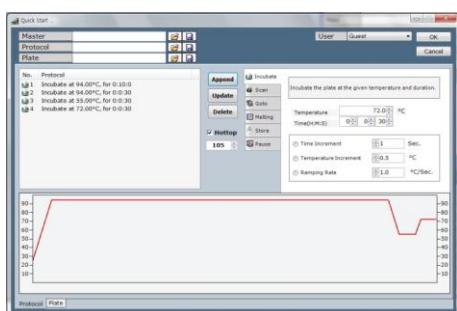
Store keeps the 96-well thermal block at a set temperature when thermal cycling is complete. The heated lid will start cooling down automatically. *Exicycler*™ 96 will keep the main door closed and will maintain thermal block at the set temperature until you stop *Exicycler*™ 96. If the **Store** step is not inserted into the protocol file, the main door will open automatically when the thermal cycling is done.

Hottop Check Box sets up a temperature for the heating lid within a range of 90°C to 120°C. The default temperature is 105°C. When the check box is unselected, the heating lid will not be heated.



10) Click **Append** to add a new step into the protocol.

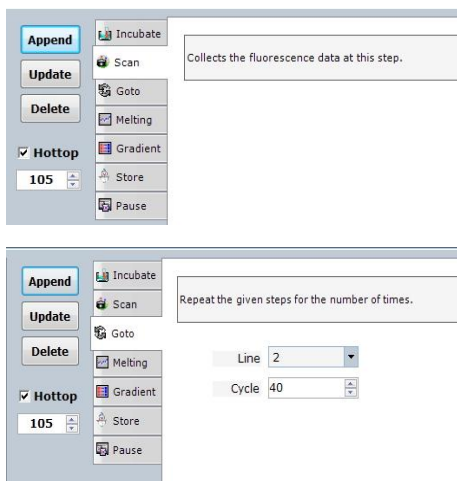
- Append** button is used when you want to add new steps into the protocol.
- Update** button is used when you want to make changes to a selected step.
- Delete** button is used when you want to delete a selected step from the protocol.



11) Click **Incubate** tab to add another Incubation step and then click **Append**. Repeat steps 9 through 10 if needed. (i.e. 94°C 30 sec / 55°C 30 sec / 72°C 30 sec).

NOTE:

To edit **Incubate** steps, click one of the steps in the **Protocol Information** window and edit. Click **Update** to change the protocol.

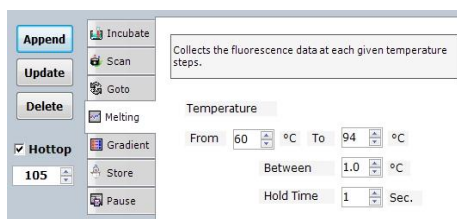


12) Click **Scan** tab and then **Append**.

13) Click **Goto** tab and select a starting step (i.e. "2") in the **Line** drop-down list. Enter a number of cycles (i.e. "40") in the **Cycle** field, and then click **Append**.

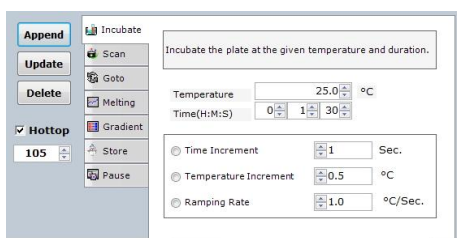
NOTE: Melting curve analysis

Melting curve analysis is an assessment of the dissociation-characteristics of double-stranded DNA during heating.



- 14) Click **Melting** tab to perform melting analysis. Enter starting temperature in the **From** field (i.e. “60”), ending temperature in the **To** field (i.e. “94”), a temperature interval in the **Between** field (i.e. “1”), and a hold time in the **Hold Time** field (i.e. “1”).

- 15) Click **Append**.



- 16) Click **Incubate** to add finish step (i.e. 25°C 1 min 30 sec) and then click **Append**.

NOTE:

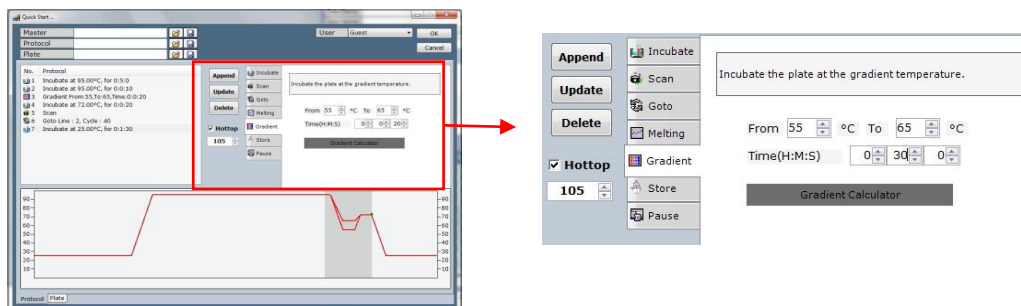
The door of *Exicycler*™ 96 will open automatically when a Real-Time PCR protocol does not include **Store** step. If **Store** step is included in the protocol, you must stop *Exicycler*™ 96 by clicking **Stop** button in order to open the door. Otherwise, *Exicycler*™ 96 will continue to store samples in the thermal block at the set temperature.

IMPORTANT:

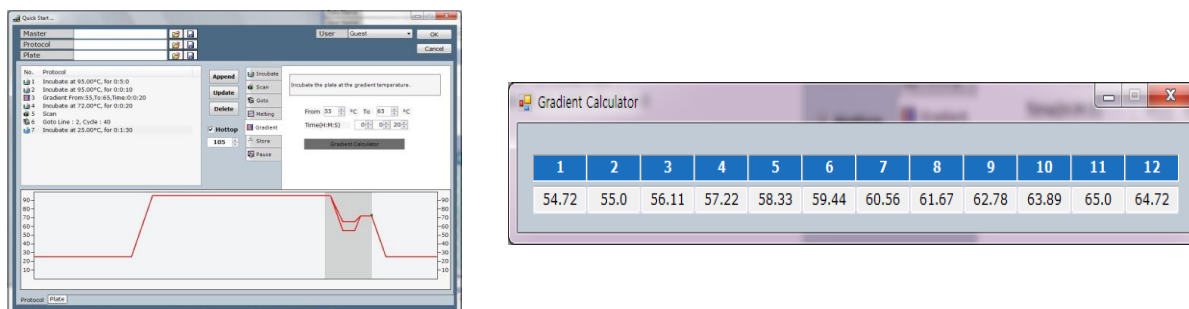
To set the temperature on the Hot top Make sure that the Hottop check box is selected. The default value is set to 105 °C. If you turn off the Check box hot top is not heated.

Additional: Setting the temperature gradient mode

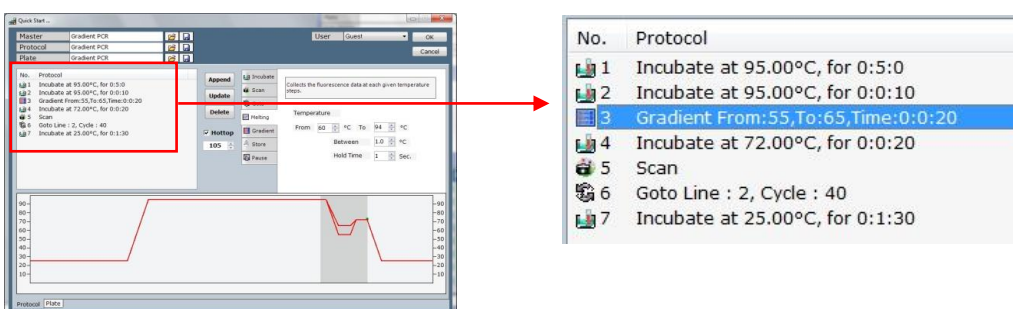
- Click **Gradient** tap, enter starting temperature in the **From** field, ending temperature in the **To** field.

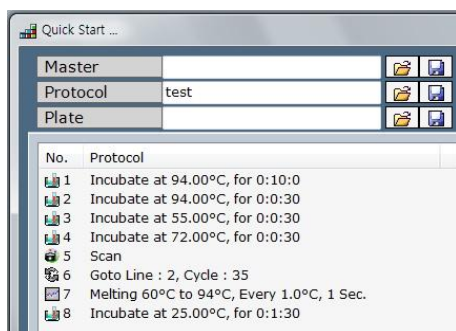


- Press 'Gradient Calculator' button below the time setting window, and 'Gradient Calculator' window will appear. It will show predicted temperatures on each well.



- Click **Append**.



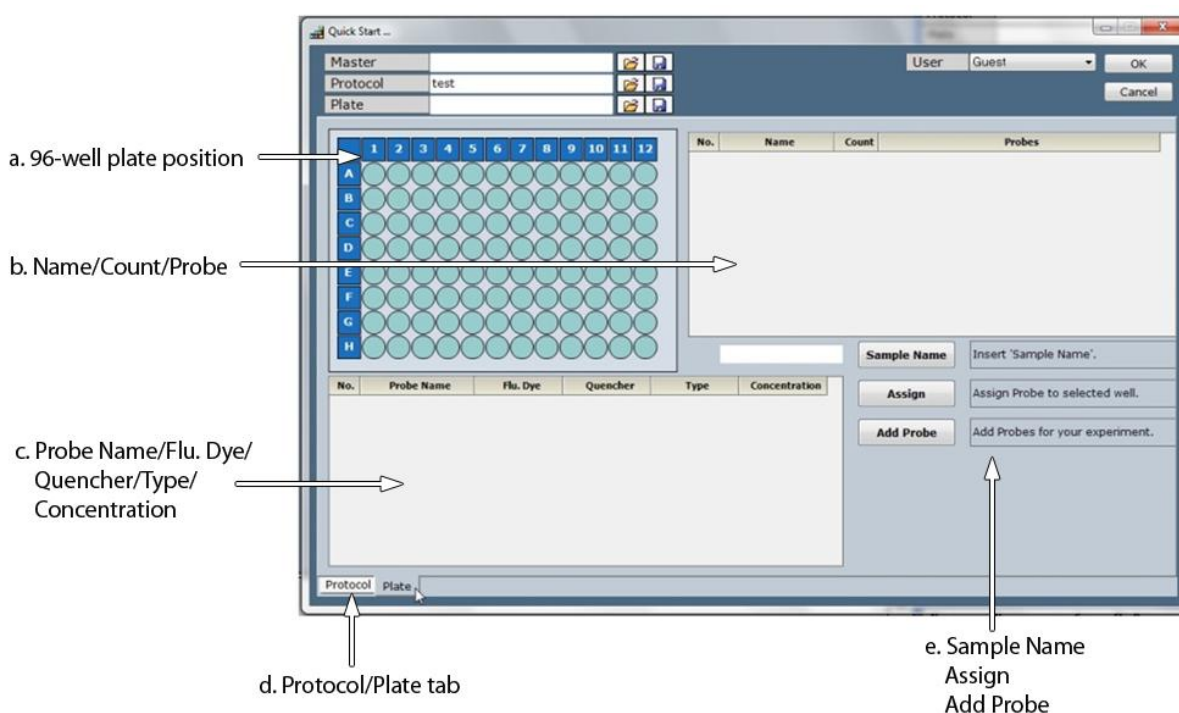


17) Enter a protocol file name in the **Protocol** field at the top left (i.e. “test”) and then click button to save the protocol.

NOTE:

Click button from the Quick Start to open the saved Master, Protocol and Plate files when needed.

18) Once the protocol is saved, click **Plate** tab to create a plate file. Plate window will appear as follows:

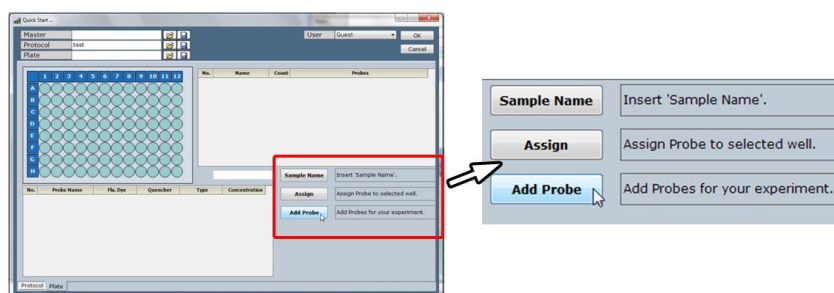


- 96-well plate position** specifies well locations for samples.
- Name/Count/Probe** displays a name and probe information for each sample.
- Probe Name/Flu. Dye/Quencher/Type/Concentration** specifies a name, a fluorescence dye, a quencher dye, a type, and a concentration for each sample.
- Protocol/Plate tab** switches between the **Protocol Information** and the **Plate Information** windows.
- Sample Name** enters a sample name.
Assign specifies the information of each well such as probe and type.
Add Probe adds the probe to be used in experiment.

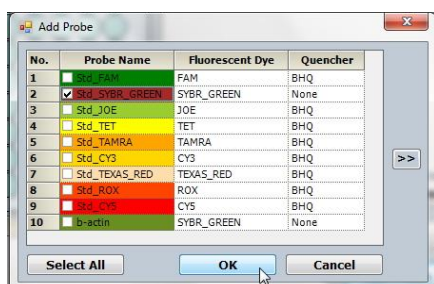
NOTE:

Ensure that you specify appropriate information (i.e. probe set up and sample type) for each well before running experiment in order to generate accurate data.

19) Click **Add Probe**, the Add Probe window will appear.

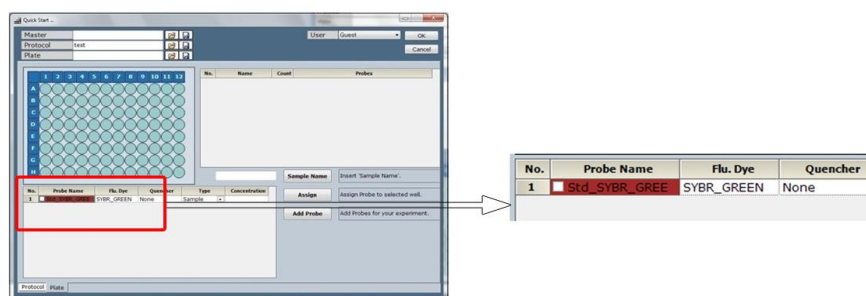


20) Select appropriate probes, and then click **OK**.

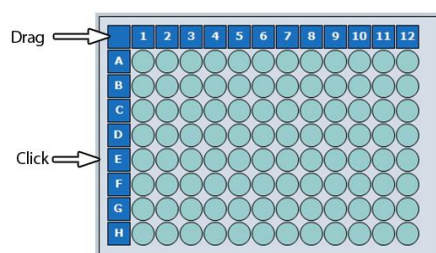


- Probe Name:** displays probe name assigned by the user.
- Fluorescent Dye:** displays name of a fluorescence dye assigned by the user.
- Quencher:** displays name of a quencher assigned by the user.


21) The probe is loaded and shown as follows:



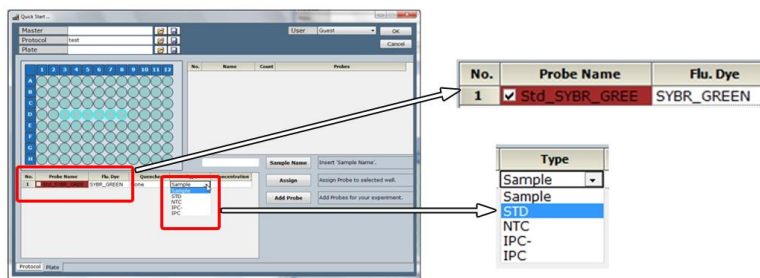
22) Select wells from the 96-well plate diagram.



NOTE:

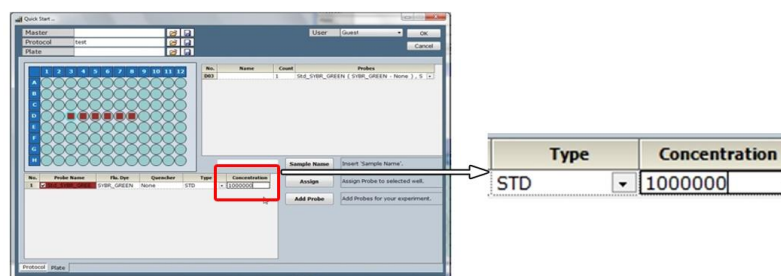
Use the left mouse button when selecting a single well. When selecting a range of cells, click the first cell in the range, and then drag to the last cell. You can also select cells in a row or column by pressing CTRL and clicking the row or column heading. To select all cells in 96-well plate, click the cell  at the top left corner of the diagram.

- 23) Click the probe option cell and then select **STD** in the **Type** drop-down list. Select the check box of **Probe Name** and then click **Assign**.

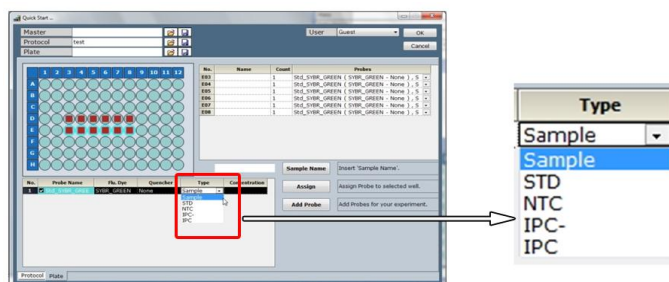


- Sample** represents unknown samples.
- STD** stands for a standard sample of a known concentration.
- NTC** stands for **No Template Control** and is a sample without a template.
- IPC** stands for **Internal Positive Control** and is a sample that monitors the PCR run during Existence / Non-existence reaction. It will also diagnose cause of the negative result from PCR.
- IPC-** is a sample that is used as a template and contains a reagent to prevent the IPC reaction during Existence / Nonexistence reaction. IPC- is not amplified during the Real-Time PCR.

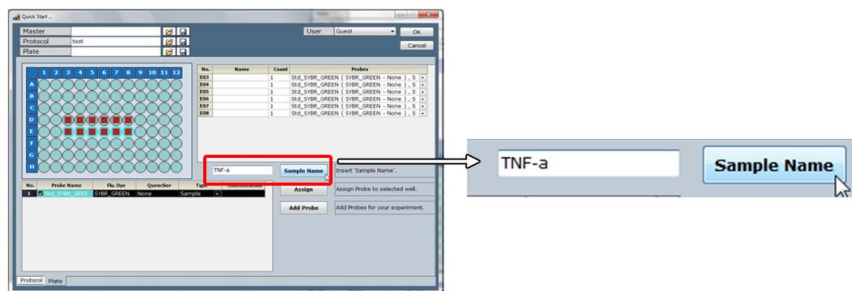
- 24) For example, Click well D3 and enter '1000000' for a concentration of 10^6 -copy and then click **Assign**. Repeat this for wells D4 through D8 with concentrations of serial diluted standards.



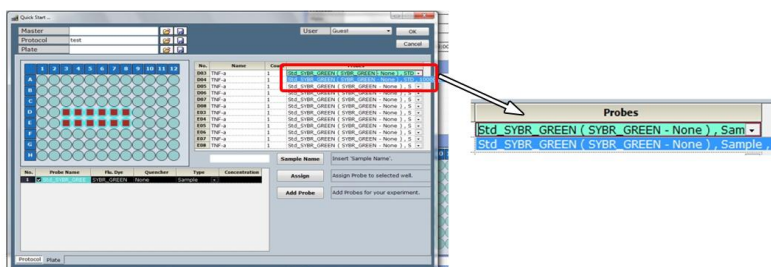
- 25) Select wells E3 through E8 in the plate diagram. Select **Sample** in the **Type** drop-down list, and the click **Assign**.





- 26) Select cells D3 through E8 and enter a sample name in the **Sample Name** field. Click **Sample Name** to save sample name.

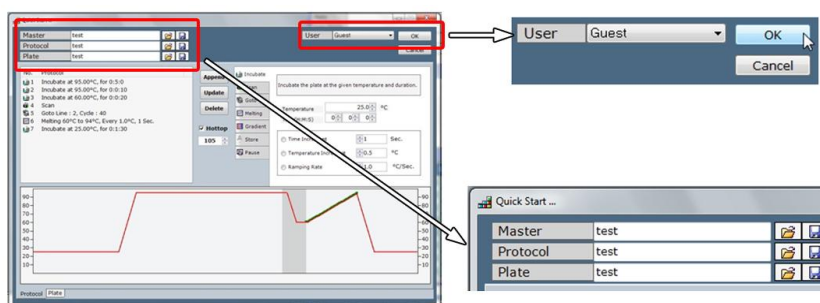


- 27) Verify information on each well in the **Name/Count/Probe** window.





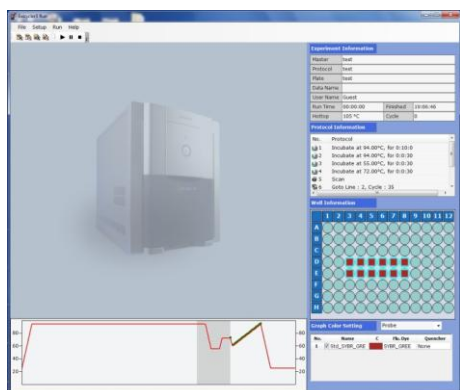
- 28) Enter a plate name in the **Plate** field (i.e. Test) and then click  button to save the plate file.

- 29) The protocol file and plate file are saved. Enter a master file name in the **Master** field (i.e. Test) and then click  button to save the master file.



NOTE:

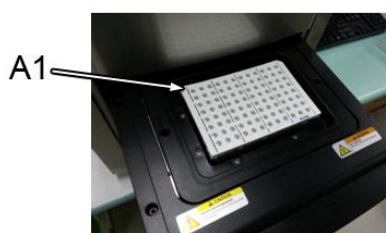
Save the master file, the protocol file, and the plate file by clicking  button. You can open the saved master file by clicking  button from Quick Start menu. The master file includes both protocol and plate file.



30) Click **OK** at the top right corner. Go back to the main window.

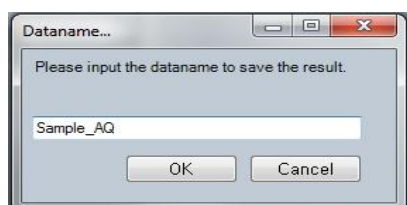
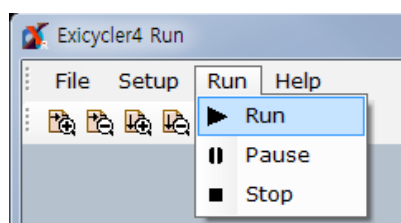
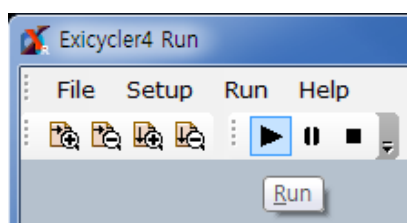


31) Ensure the status LED in front of the *Exicycler*™ 96 is blinking green.



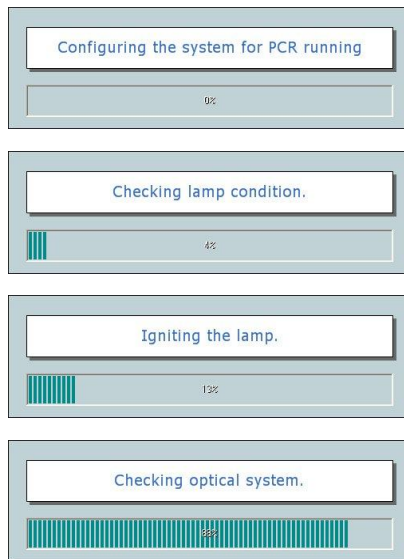
32) Press the **DOOR** button for a full second to open the door. Load the 96-well plate with A1 positioned at top-left corner of the block.

33) Verify the master file and go to **Run > Run** from the top menu bar or click the **Run** button.



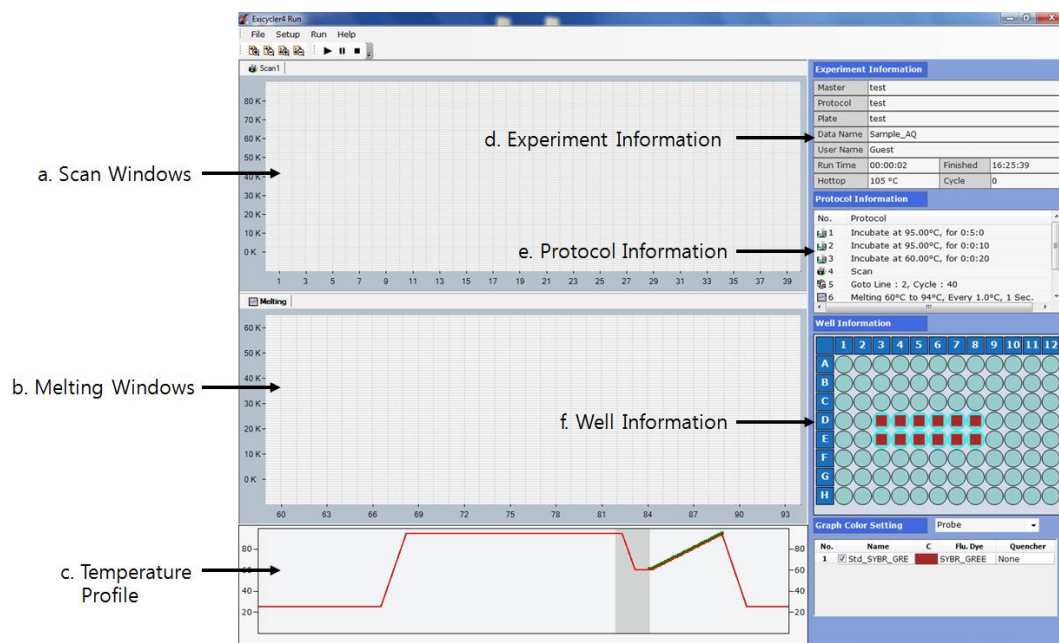
34) Enter a data name (i.e. Sample_AQ) in the **Dataname** window and click **OK**. If you do not enter the data name, default name will be used.

35) The following three message boxes will appear in the following order.

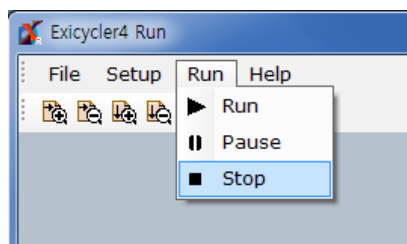


- This message will appear when closing the door of the *Exicycler*™ 96.
- This message will appear when the lamp condition is being checked.
- This message will appear during lamp ignition.
- This message will appear when lamp is turned on and initialization of *Exicycler*™ 96.

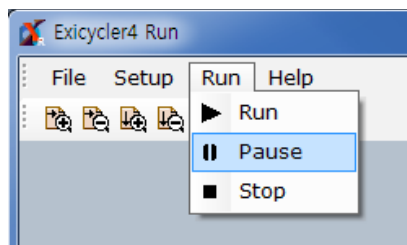
36) The main window will appear when the progress bar finishes without any problems.



- Scan** window displays a curve of amplification in real time during PCR.
- Melting** windows displays a melting curve in real time when the melting step is included in the protocol file.
- Temperature Profile** displays a temperature profile and in real time.
- Experiment Information** displays information of the current experiment.
- Protocol Information** indicates current progress of the experiment.
- Well Information** displays details of each well when selecting either **Probe** or **Type** in the **Graph Color Setting** drop-down list. To display the curve of amplification, select a well from 96-well plate diagram and click the check box from the probe option.



37) Go to **Run > Stop** to stop *Exicycler™* 96 or click **Stop** button.



38) Go to **Run > Pause** to pause *Exicycler™* 96 or click **Pause** button.

IMPORTANT:

If the pop up window remains more than 5 minutes after running *Exicycler™* 96 or if the temperature profile does not display anything in the main window, turn off *Exicycler™* 96 and turn it on again. Start **Run Exicycler4** again and run *Exicycler™* 96 again. If the same error keeps occurring, please contact us for customer service.

IMPORTANT:

It is recommended to re-start *Exicycler™* 96 at least 10 minutes after the previous Real-Time PCR run has finished. Continuous operation without a break will reduce the lamp life span and cause errors.

NOTE:

Do not turn off *Exicycler™* 96 while the heating lid is warming up. While the lid is heated to the set temperature, 96-well block maintains at 25°C. The thermal cycling will start when the heating lid reaches set temperature and the lamp is stabilized.

NOTE:

*.ex3 file is created under a folder designated by the user after the experiment is complete. The user can analyze the *.ex3 file using *Exicycler™* 96 Analysis Program to generate analysis data. Please refer to **Analyzing Data using Analysis Program** for data analysis.

Reagents and Consumable Products

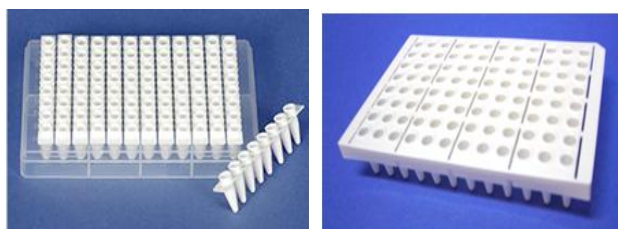
Various reagents and kits are required to perform a Real-Time PCR in *Exicycler*™ 96 Real-Time Quantitative Thermal Block. Please refer to this section to obtain detailed information about the appropriate reagents and kits for your experiments. For ordering, please go to the 71 page, **Ordering Information**.

PCR Premix kit

AccuPower® *Greenstar*™ qPCR PreMix kit allows an easy and fast amplification in *Exicycler*™ 96. *AccuPower*® *Greenstar*™ qPCR PreMix kit consists of Sybr® Green I fluorescent dye, HotStart Taq DNA polymerase, and necessary qPCR components. Therefore, only template, primers, and DW need to be added to start your amplification.

Optical 0.2 ml 8-strip tube and 96-well plate

You must use an optical tube or a plate when performing Real-Time Quantitative PCR in *Exicycler*™ 96. A standard tube or a plate can be also used, but only for a conventional PCR without fluorescent dyes.



Optical sealing tape

Seal up the optical tubes or plates tightly with the optical sealing tape for fluorescence detection. The sealing tape is available in the size of 96-well plate. Therefore, cut up the sealing tape when using 0.2 ml 8-strip tubes.



You must cut up the sealing tape with a box cutter, not scissors. The tape adhesive can be carried over to the surface of sealing tape when cutting up the tape with scissors. This will make the tubes stick to the heating lid of *Exicycler*™ 96. Tubes stuck to the lid will drop inside *Exicycler*™ 96 when the lid is cooled down. Using at least 2 strips of 8-strip tubes at a time is recommended to prevent this error.



Chemical hazard:

AccuPower® *Greenstar*™ qPCR PreMix may cause eye and skin irritation, and respiratory tract irritation. Read MSDS before use and follow the instructions if swallowed or inhaled. Wear appropriate protective eyewear, clothing, and gloves.

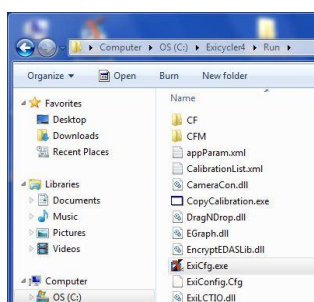
Performance Maintenance

Performing System Diagnosis using ExiCfg

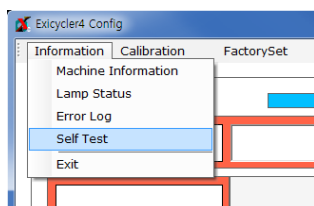
- 1) Turn on *Exicycler*™ 96 by pressing the **POWER** button.



- 2) Go to 'C:\WExicycler4\Run' and double click **ExiCfg.exe** to start the program.



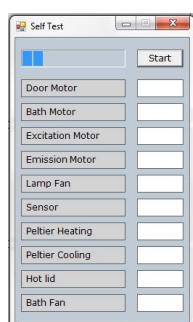
- 3) Go to **Information > Self Test**.



NOTE:

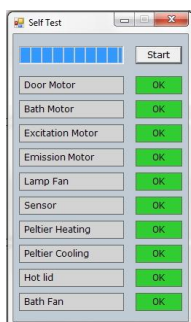
'USB Communication is NOT initialized' message box will pop up if *Exicycler*™ 96 is turned off or if the cable connection between *Exicycler*™ 96 and the computer is not firmly connected.

- 4) Click **Start** in the **Self Test** window.



IMPORTANT:

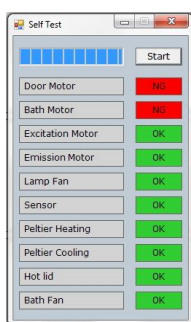
Make sure that there are no objects placed in front of the door while performing Self Test.



- 5) **OK** signs will show up in green, when all of the self-diagnosis tests pass completely without any problems.

NOTE:

Self-diagnosis is complete with two short beeps.

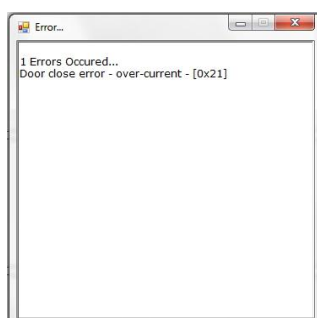
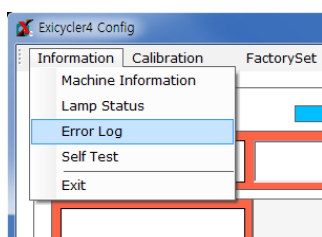


- 6) When any of the self-diagnosis tests fail, **NG** signs will appear in red.

NOTE:

Any problems caused during self-diagnosis are recorded in 'Error log'.

- 7) Go to **Information>Error Log** from the top menu bar to see the problems.



Guide to *AccuPower*® Fluorescence test kit for calibration

Prepare to perform the calibration with a Fluorescence test kit. The Fluorescence test kit is designed for *Exicycler*™ 96 Real-Time Quantitative Thermal Block. Therefore, it is not applicable to other Real-Time instruments. The Fluorescence test kit is comprised of 11 plates, a mask fluorescence test plate, a background fluorescence test plate, multi-channel fluorescence test plates (9 different optical fluorescence test plates of filter sets) present in *Exicycler*™ 96. The Fluorescence test kit is available for reuse up to 3 times. For more information about the Fluorescence test kit, please see the following:

Before Starting Calibration with the Fluorescence test kit

Centrifuge, Disposable plastic gloves, *AccuPower*® Fluorescence test kit for *Exicycler*™ 96 (A-2060-A1)

Fluorescence test plate preparation

The Fluorescence test kit is shipped refrigerated or frozen and must be stored in the freezer upon receipt. Retrieve one Fluorescence test kit right before starting the calibration.



- 1) Take out the Fluorescence test kit from the freezer.



- 2) Take out a sealed packs in the Fluorescence test kit.



- 3) Allow the pack to thaw in room temperature for at least 10 minutes.



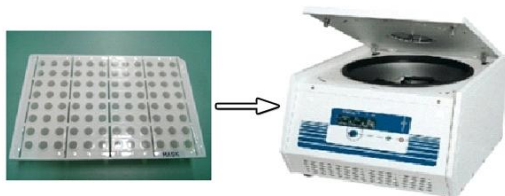
- 4) Take out a Fluorescence test plate from its packaging.

IMPORTANT:

Pay particular attention to the Fluorescence test kit when handling. Wear disposable plastic gloves to prevent contamination on the sealing tape covering 96-well plate. Wipe the surface of the plate with 70% ethanol when it needs to be cleaned.

NOTE:

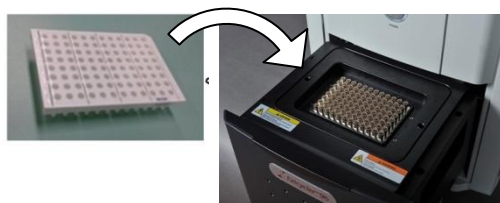
Do not vortex the Fluorescence test plate. A small amount of Fluorescence test solution is pre-aliquoted in each well, and it may be lost while vortexing.



- 5) Place the Fluorescence test plate in a rack and centrifuge for 5 minutes.

NOTE:

It is important to centrifuge the Fluorescence test kit prior to use. This will spin down remains of fluorescence dye on the side of the well and to remove air bubbles at the bottom of the well.



- 6) Protect the Fluorescence test plate from direct sunlight after centrifugation. Place the plate directly into *Exicycler*™ 96.

- 7) Put the Fluorescence test kit back into its packaging and return it to the freezer when the calibration is done.

IMPORTANT:

The Fluorescence test kit contains photosensitive components. Keep the Fluorescence test kit away from light during calibration. Put the Fluorescence test plate back into its packaging right away for reuse.

Calibration using ExiCfg

The calibration must be performed prior to operating *Exicycler™* 96 Real-Time Quantitative Thermal Block. You can either transfer proper calibration data associated with a serial number from the installation CD to the computer or perform the calibration yourself. Install the Operation and Analysis Software for the calibration data transfer to the computer. For a reliable operation of the *Exicycler™* 96, calibrating *Exicycler™* 96 with a Fluorescence test kit is recommended. Calibration must be done when moving *Exicycler™* 96 to a different location or when changing a light source lamp. A periodical calibration of every 6 months helps to maintain the optimum condition of *Exicycler™* 96.

Use the ExiCfg program to calibrate *Exicycler™* 96. The ExiCfg calibrates as well as diagnoses systemical condition of *Exicycler™* 96. Make sure that you are fully trained for handling the ExiCfg before starting calibration. Otherwise, authorized staff is only allowed to manage the ExiCfg. Mis-use of the ExiCfg by unauthorized staff may cause serious damage to *Exicycler™* 96.

The calibration is carried out in 4 steps, Warming up the lamp > Mask calibration > Background calibration > Multi-Channel calibration.

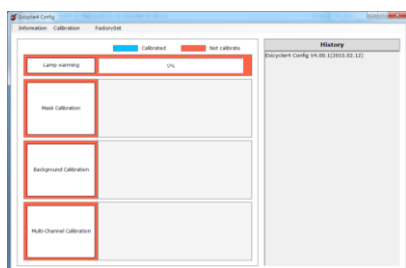
Mask Calibration



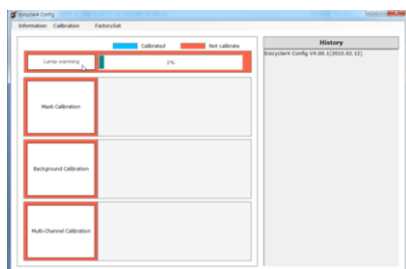
- 1) Turn on *Exicycler™* 96 by pressing the **POWER** button.

NOTE:

Make sure the status LED is blinking green after the self-diagnosis prior to starting the Calibration.



- 2) Go to '**C:\WExicycler4WRun**' and double click **ExiCfg.exe**.



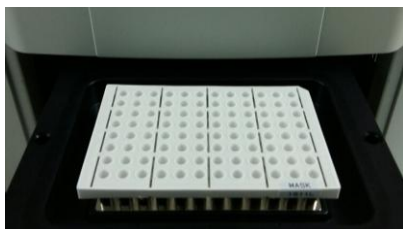
- 3) Click **Lamp warming** to turn on the lamp. A progress bar of the **Lamp warming** will start right after 'The lamp is turned on' message appears on the 'History' box. Do not click any buttons until the progress bar finishes.

IMPORTANT:

It usually takes about 30 seconds for the message 'The lamp is turned on' to appear on the 'History' box. If the message does not appear in 3 minutes, turn off *Exicycler*™ 96 and turn it on again after 5 seconds. In case of an abnormal shutdown like this, wait about 3 minutes, then click **Lamp warming** to turn on the lamp again. It takes approximately 10 minutes to reach the maximum light intensity there after. Therefore, wait until the progress bar of the **Lamp warming** finishes before proceeding further.



- 4) Press the **DOOR** button to open the door.



- 5) Place the Mask Fluorescence test plate on the block.

NOTE:

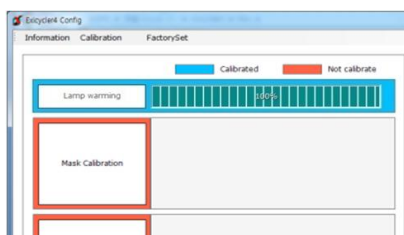
You must perform the Mask Calibration test prior to any other calibrations.

IMPORTANT:

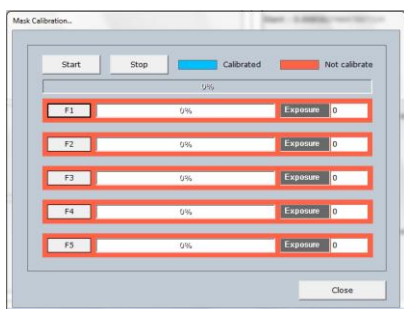
It is important to load the Fluorescence test plate in the right position. A misplaced plate may cause damage or technical problems.



- 6) Press the **DOOR** button again to close the door.



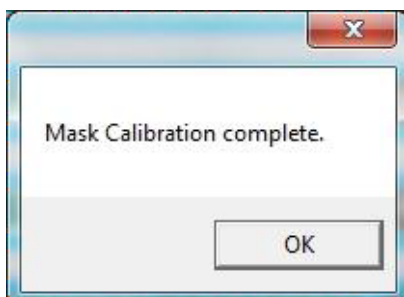
7) Click Mask Calibration button.



8) Click **Start** button in the 'Mask Calibration' window.

NOTE:

The Calibration time is approximately 10 minutes depending on the condition of *Exicycler*™ 96 and the computer.



9) When the Mask Calibration is complete, click **OK**.

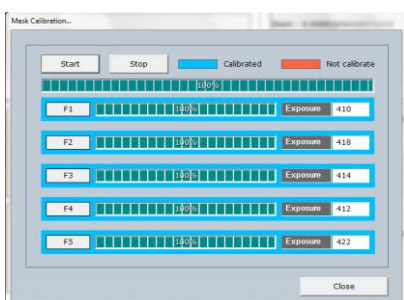
NOTE:

The door will open when the Mask Calibration is successfully completed. Put the plate back into its packaging and return it to the freezer.

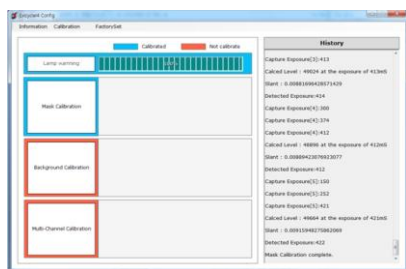


High temperature

Wait at least 5 seconds before taking out the Fluorescence test plate from the 96-well block. The Fluorescence test plate is heated to a temperature of 100°C and may cause a burn.



10) Click **Close** in the 'Mask Calibration' window.



11) The 'Mask Calibration' frame will turn blue when the Mask Calibration is completed.

Background Calibration



- 1) Press the **DOOR** button to open the door.

NOTE:

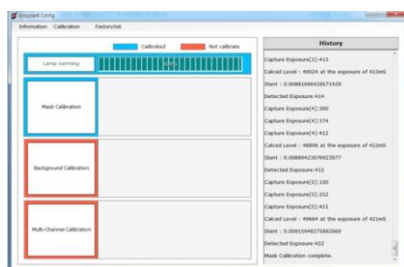
This step is omissible when performing the Background Calibration followed by the Mask Calibration.



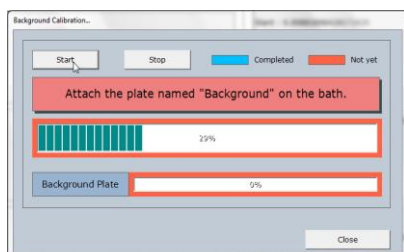
- 2) Place the Background Fluorescence test plate on the block.

IMPORTANT:

It is important to load the Fluorescence test plate in the right position. A misplaced plate may cause damage or technical problems.



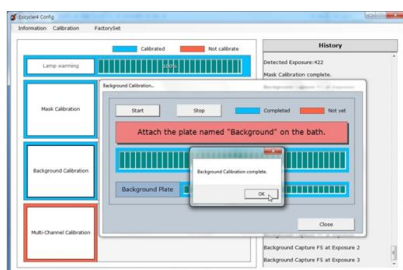
- 3) Click Background Calibration button.



- 4) Click **Start** in the 'Background Calibration' window.

NOTE:

The Background Calibration takes approximately 10 minutes depending on the condition of *Exicycler*™ 96.



- 5) When the Background Calibration is complete, click OK.

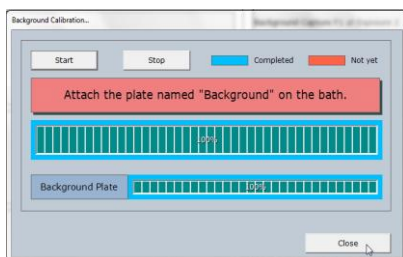
NOTE:

The door will open when the Background Calibration is successfully complete. Put the plate back into its packaging and return it to the freezer.

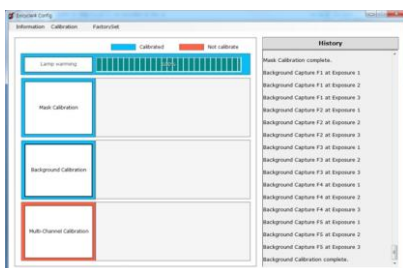


High temperature

Wait at least 5 seconds before taking out the Fluorescence test plate from the 96-well block. The Fluorescence test plate is heated to a temperature of 100°C and may cause a burn.



- 6) Click **Close** in the 'Background Calibration' window.



- 7) The 'Background Calibration' frame will turn blue when the calibration is completed.

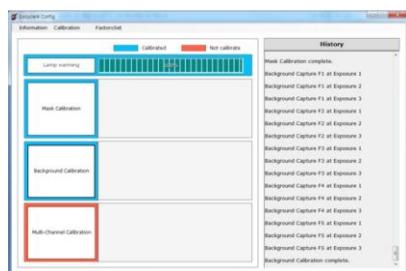
Multi-channel Calibration



- 1) Press the **DOOR** button to open the door.

NOTE:

This step is omissible when performing the Background Calibration followed by the Mask Calibration.



- 2) Click Multi-Channel Calibration button.

No.	Name	
01	<input checked="" type="checkbox"/> FAM	
02	<input checked="" type="checkbox"/> SYBR_GREEN	
03	<input checked="" type="checkbox"/> JOE	
04	<input checked="" type="checkbox"/> TET	
05	<input checked="" type="checkbox"/> TAMRA	
06	<input checked="" type="checkbox"/> CY3	
07	<input checked="" type="checkbox"/> TEXAS_RED	
08	<input checked="" type="checkbox"/> ROX	
09	<input checked="" type="checkbox"/> CY5	

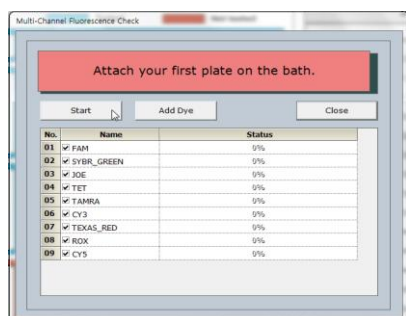
- 3) Select fluorescence dyes in the 'Multi-Channel Calibration' window for the Calibration.

NOTE:

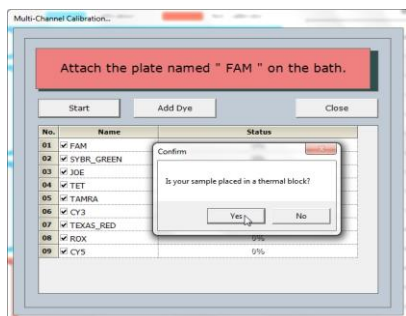
9 dyes are available for calibration.

NOTE:

For a selective multi-channel calibration of your desirable dyes, select check boxes of the dyes.



4) Click **Start**.



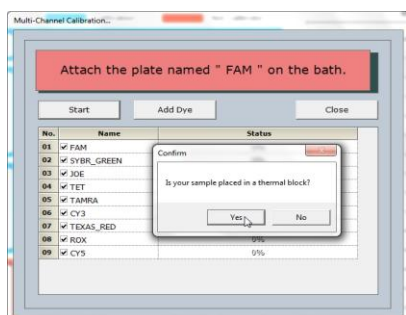
5) Prepare the Multi-Channel Fluorescence Test plate with a dye **X** (i.e. "FAM") when 'Attach the plate named '**X**' (i.e. "FAM") on the bath' message appears.



6) Place the **Multi-Channel Fluorescence Test plate** on the block.

IMPORTANT:

It is important to load the Fluorescence Test plate in the right position. A misplaced plate may cause damage or technical problems.



7) Click **Yes** in the 'Confirm' window.

8) The door will open when the Calibration is successfully complete.

NOTE:

An approximate calibration time for each dye is 5 minutes.

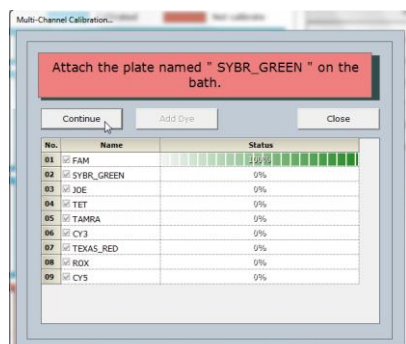
NOTE:

Put the plate back into its packaging and return it to the freezer.



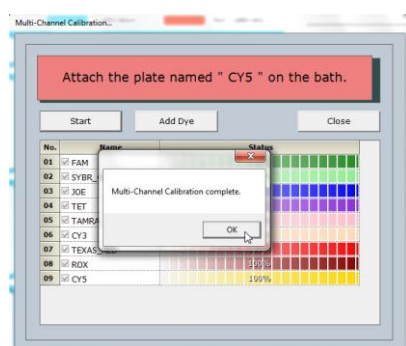
WARNING High temperature

Wait at least 5 seconds before taking out the Fluorescence test plate from the 96-well block. The Fluorescence test plate is heated to a temperature of 100°C and may cause a burn.

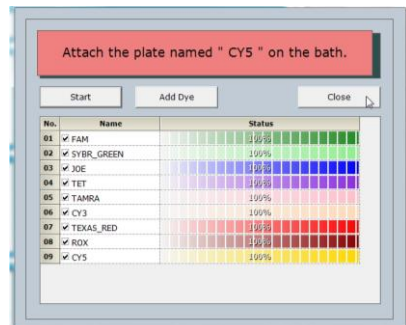


- 9) Prepare the Fluorescence Test plate with a dye **X** (i.e. “SYBR Green”) when ‘Attach the plate named ‘X’ (i.e. “SYBR Green”) on the bath’ message appears.

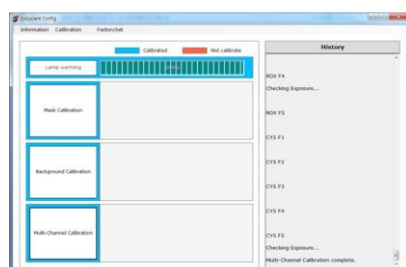
- 10) Click **Continue** to repeat step 9.



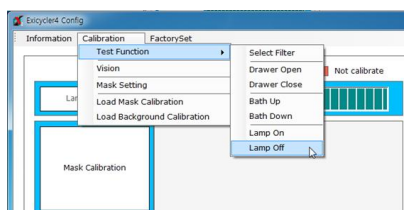
- 11) When the Multi-channel Calibration is complete, click **OK**.



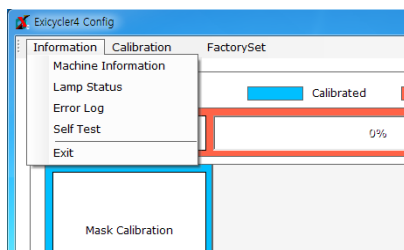
- 12) Click **Close** in the ‘Multi-Channel Calibration’ window.



- 13) The ‘Multi-Channel Calibration’ frame will turn blue when the Calibration is completed.



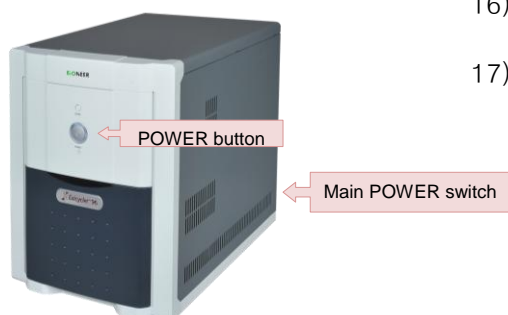
14) Go to Calibration>Test Function>Lamp Off from the top menu bar.



15) Go to **Information>Exit** from the top menu bar to close ExiCfg program.

IMPORTANT:

Wait at least 3 minutes to switch off main power of *Exicycler™* 96. The cooling fan will continue to run to cool down the lamp. Shutting down *Exicycler™* 96 before cooling down the lamp will reduce the lamp life span.



16) Turn off *Exicycler™* 96 by pressing the **POWER** button.

17) Turn off *Exicycler™* 96 using the main power switch located at the back of *Exicycler™* 96.

Cleaning the main body

Note:

- Turn off *Exicycler*™ 96 Real-time Quantitative Thermal Block, then remove the power cord.
- Allow the instrument to cool until the bath block reach room temperature.

Cleaning the Block Wells

If you use any cleaning or decontamination method, except those recommended in the manual, you risk damaging the Instrument. Clean the block wells once a weekly or as needed.



Always wear protective glasses and gloves when servicing the instrument. Also, make sure you disconnect the instrument from power cord before you begin any service procedure.



During instrument operation, the temperature of the bath block can be as high as 100°C. Before performing the procedure, keep hands away until the bath block reach room temperature.

To clean the block wells:

- 1) Open the Front door.
- 2) Remove the sample from the bath block and set it aside.
- 3) Use a cotton swab soaked in pure isopropyl alcohol or DNA Zap to clean the wells thoroughly. Make certain that the isopropyl alcohol or DNA Zap has evaporated completely before reloading a sample tray.



CHEMICAL HAZARD

Isopropyl alcohol is a flammable liquid and vapor. Exposure may cause eye, skin, and upper respiratory tract irritation. Prolonged or repeated contact may dry skin and cause irritation. Exposure may cause central nervous system effects such as drowsiness, dizziness, and headache. Read the MSDS, and follow the handling instructions. Remove any remaining isopropyl alcohol from the cover.

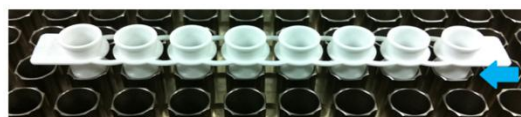
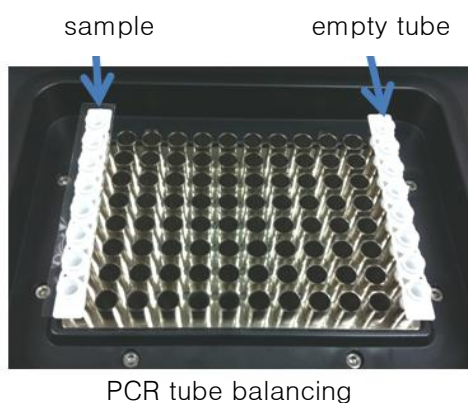
Note:

If the platen becomes contaminated with amplified DNA, raise the hot-top cover to a cleaning position, wipe the platen with a cloth or cotton swab soaked in bleach, then rinse with water.

- 1) Clean the heated platen once a month or as needed.
- 2) If the hot-top cover become contaminated with amplified DNA, raise the hot-top cover to a cleaning position. Wipe the cover with a cloth swab soaked in Isopropyl alcohol or DNA zap, then wipe the cover with a damp cloth.

Precautions for PCR tube loading

Do not put a tube column bias one if you experiment with PCR Strip tube. This can be caused by a phenomenon in skewing the Hot Lid cause evaporation of such samples, equipment failure. So please put the empty tube to balance the opposite direction. Please also well positioned for insertion into the correct PCR tube. If Tube is inserted incorrectly can not get the normal data, in this case, you must do the experiment again.



Correctly located strip tube



Incorrectly located strip tube

Replacing Fuses

The instrument has two 250V, F10AL and 5×20mm fuses.

Required Materials

- Two 250V, F10AL and 5×20mm fuses
- Small screw-driver(-)

Procedure

- 1) Turn off the instrument and disconnect the power cord from the back of *Exicycler*™ 96.



ELECTRICAL SHOCK HAZARD

Severe electrical shock, which could cause physical injury or death, can result from working on an instrument with high voltage power supply. To avoid electrical shock, disconnect the power supply to the instrument, unplug the power cord, and wait at least 1 minute before working on the instrument.



- 2) Insert a small screw-driver(-) into the slot in the upper portion of the power entry module, and open the fuse door.



- 3) Pull out the fuse compartment to inspect the two fuses in the fuse compartment.



- 4) Pull out the blown fuse(s) from the fuse compartment and replace with new 250V, F10AL, 5×20mm fuses.

- 5) Place the fuse compartment back into the power entry module and close the fuse door.

- 6) Press the fuse door until it locks in place.

- 7) Connect the instrument power cord.



Returning *Exicycler*™ 96 for Service

- 1) Decontaminate the instrument.



If the bath block became contaminated with radioactivity, use a commercially available decontaminant to remove the contamination. If the block is not decontaminated, the instrument cannot be returned to Bioneer for service.

- 2) Complete certification for instrument decontamination.
 - 3) Fax or e-mail (exicycler-support@bioneer.com) the service request form to the customer center.
 - 4) Pack the instrument in the provided packaging, without any accessories or power cords. Include service request form in the box.
-

Note:

Request for instruments repair without the service request form can lead to delayed in service.

- 5) Affix the provided postage to the box, then ship the instrument to the designated facility. The repair process requires 1 to 3 weeks.

Troubleshooting

Please take recommend action for each observation. Contact Bioneer Customer Service Center if problem continues after the recommended action.

Problems	Recommended Action
<i>Exicycler™ 96</i> does not start.	<ol style="list-style-type: none"> 1. Make sure the power cable is firmly connected to the wall circuit, and then switch on the power supply button at the rear of <i>Exicycler™ 96</i>. 2. Check a fuse box located at the rear of <i>Exicycler™ 96</i>. Change the fuse if it has blown.
Errors occur either after or during self-diagnosis (Status LED in red).	<ol style="list-style-type: none"> 1. The lamp may still be cooling down or the self-diagnosis is still running. If the status LED does not turn back to green in 3 minutes, turn off <i>Exicycler™ 96</i> and turn it on again. If the same error occurs, please contact Bioneer Customer Service Center for help. 2. Turn off <i>Exicycler™ 96</i> if unexpected errors occur. Turn on <i>Exicycler™ 96</i> again to cool down the lamp and wait for 3 minutes. Press the POWER button to start self-diagnosis. Please contact Bioneer Customer Service Center if the same error keeps occurring.
No communication detected between the computer and <i>Exicycler™ 96</i> .	<ol style="list-style-type: none"> 1. Make sure that the USB cable is firmly connected to the computer. 2. Ensure you use the USB cable provided with <i>Exicycler™ 96</i> to connect the computer and <i>Exicycler™ 96</i>. 3. Check if <i>Exicycler™ 96</i> is in the “Standby” mode. The status LED must blink in green. Turn off <i>Exicycler™ 96</i> and back on again if the status LED still blinks in red.
The POWER button or the DOOR button does not work.	<ol style="list-style-type: none"> 1. Make sure that the power cable is firmly connected to the wall circuit, and then switch on the power supply button at the rear of <i>Exicycler™ 96</i>. 2. The self-diagnosis may be still running. Wait until the self-diagnosis is complete and the POWER button blinks in green.
<i>Exicycler™ 96</i> has stopped running.	<ol style="list-style-type: none"> 1. Check if the electricity is supplied properly. Operate an AVR or UPS if needed. 2. Disable Screen Saver and Monitor Power in the Control Panel. 3. Ensure you use the USB cable provided with <i>Exicycler™ 96</i> to connect the computer and the <i>Exicycler™ 96</i>. 4. Check if the USB driver is installed properly. If not, reinstall it again. 5. Do not plug in any other USB cables in the computer while <i>Exicycler™ 96</i> is running to prevent friction between <i>Exicycler™ 96</i> and the computer.
<i>Exicycler™ 96</i> does not start a thermal cycling.	<ol style="list-style-type: none"> 1. <i>Exicycler™ 96</i> may still be in the “Standby” mode in order to warm up the lamp. Warming up the lamp takes about 10 minutes. The thermal cycling will start automatically after the lamp warm up has finished.

Intensity of fluorescence signal is low.	<ol style="list-style-type: none"> 1. Either examine fluorescence signal of the probe used for Real-Time PCR or use a new kit. 2. The PCR product amplified may be too long or there may be non-specific products. Perform gel electrophoresis to determine the presence of amplification product or adjust an annealing temperature or Mg^{2+} concentration if needed. 3. Perform the calibrations again to adjust the light intensity of the lamp.
Excessively high intensity of fluorescence signal.	<ol style="list-style-type: none"> 1. Adjust concentration of the probe used for Real-Time PCR. 2. Make sure you use an appropriate probe system. 3. Adjust and optimize the PCR sample conditions.
The software shuts down abnormally.	<ol style="list-style-type: none"> 1. The USB driver is not been installed properly. Re-install the USB driver.
PCR sample has evaporated.	<ol style="list-style-type: none"> 1. Check if the heating lid works or if the sample tubes or plates are completely sealed with the sealing tape. 2. Ensure the heating lid option is set up correctly. The Hottop Check Box must be selected and correct temperature must be set up. 3. A small amount of evaporation is not critical. 4. It is recommended that you use Bioneer kits and reagents to prevent PCR sample evaporation.
No PCR products are amplified.	<ol style="list-style-type: none"> 1. Perform gel electrophoresis to determine the presence of amplification products. Adjust an annealing temperature or Mg^{2+} concentration if needed.
No fluorescent signal is detected although PCR product is amplified.	<ol style="list-style-type: none"> 1. Either examine fluorescence signal of the probe used for Real-Time PCR or use a new intercalating dye. 2. Perform the calibrations again to adjust the light intensity of the lamp.
Pop-up message during calibration process.	<ol style="list-style-type: none"> 1. Background Calibration finished will appear if the Background Calibration is successful. 2. Can't Read Data from EEPROM will appear if the computer cannot read data from Exicycler™ 96. Check if the USB cable is firmly connected between the computer and Exicycler™ 96. 3. Can't close program during PCR will appear if you attempt to close Exicycler™ 96 software while PCR is still running. 4. Do you want to stop PCR? will appear if you click Stop button during the Multi-channel Calibration. 5. Did you add plate on the bath? will appear to make sure that the calibration plate is loaded in the thermal block prior to PCR. 6. Mask Calibration finished will appear if the Mask Calibration is complete. 7. Multi-Channel Calibration finished will appear if the Multi-channel Calibration is successful. 8. Need to set up Machine ID will appear if an instrument ID has not been set up for Exicycler™ 96. Assign the ID using Exicycler™ 96 software.

<p>Pop-up message during calibration process.(continue)</p>	<ol style="list-style-type: none"> 9. Multi-Channel Calibration finished will appear if the Multi-channel Calibration is successful. 10. Need to set up Machine ID will appear if an instrument ID has not been set up for <i>Exicycler</i>™ 96. Assign the ID using <i>Exicycler</i>™ 96 software. 11. No matching calibration data with machine will appear if the instrument ID does not match the ID from <i>Exicycler</i>™ 96 software. Set up the instrument ID using <i>Exicycler</i>™ 96 software. 12. Turn off the lamp will appear if you attempt to end ExiCfg while the lamp is still on. To close ExiCfg, turn off the lamp first and then close the ExiCfg. 13. Please load Mask Calibration Information first will appear if you attempt to perform the Uniform Calibration before the Mask Calibration. 14. USB Communication is NOT Initialized will appear if the computer and <i>Exicycler</i>™ 96 are not communicating with each other. Check if the USB cable between the computer and the <i>Exicycler</i>™ 96 is firmly connected. 15. You must insert New Dye Name will appear if a new name is not assigned to a custom dye. 16. You must select at least one dye will appear if you start the Multi-channel Calibration without selecting dyes. You must select at least one fluorescent dye for the calibration.
<p>Error message when running <i>Exicycler</i>™ 96 software.</p>	<ol style="list-style-type: none"> 1. Can't exit program during PCR will appear if you click Stop button in <i>Exicycler</i>™ 96 software while PCR is still running. 2. Can't open data during PCR will appear if you select File > Open Data from the top menu while PCR is still running. 3. Can't Pause during Melting Protocol will appear if you click Pause button while the melting step is still running. 4. Can't read data from EEPROM will appear if errors occur during PCR and the computer cannot read data from <i>Exicycler</i>™ 96. 5. Can't read Plate Information will appear if you attempt to open an outdated plate file. 6. Can't Stop during Melting Protocol will display if you attempt to stop the <i>Exicycler</i>™ 96 software while the melting step is running. 7. Communication between machine and S/W was not initialized will display if you click Run button when <i>Exicycler</i>™ 96 is not ready. 8. Do you want to stop PCR? will display if you click Stop button while PCR is still running. 9. Fail to load calibration information will appear if the computer fails to read the calibration data from <i>Exicycler</i>™ 96. Go to C:\WExicycler4 to check if the calibration folder and file exist. 10. Melting Protocol can't be in Cycle Region will appear if the melting step is inserted within a thermal cycling. 11. Need to replace the Lamp will appear if the lamp intensity drops below 60% of the normal lamp intensity. Replace the lamp. 12. No matching calibration data with Machine. Can't Run! will appear if you click Run button when <i>Exicycler</i>™ 96 ID and the calibration data ID do not match.

<p>Error message when running <i>Exicycler</i>™ 96 software. (continue)</p>	<ol style="list-style-type: none"> 13. No matching calibration data with machine will appear if the <i>Exicycler</i>™ 96 ID and the calibration data ID do not match. 14. Please insert any protocol before inserting Goto Protocol will appear if the Goto step is inserted in the first line of a protocol file. 15. Please insert Data name will appear if you have not entered a name for data prior to PCR running. 16. Probe Information was changed, do you want to cancel this? will appear if you click the Cancel button without saving the edited probe Information. 17. Probe using same filter is assigned will appear if you assign more than 2 probe options within the same wavelength range. 18. Ramping rate option Must be inserted between Incubation steps will appear if you insert a ramping rate option in a wrong position of the protocol file. 19. Set Probe Name will appear if you have not entered a new name for the custom probe in the Add Probe window. 20. UserName was already in User List will appear when entering an existing name for User set-up. 21. You must select Dye and Quencher will display if the dye and quencher set up has not been selected in the Add Probe window.
---	---

Ordering Information and Warranty

Ordering Information

Product	
A-2060-1	<i>Exicycler™</i> 96 Real Time Quantitative Thermal Block
Accessories	
A-2060-A1	<i>AccuPower®</i> Fluorescence test kit for <i>Exicycler™</i> 96
Plastic consumables	
3111-41	Adhesive Optical Sealing Film, 100 sheets
3111-50	0.2 ml Opaque White 8-strip PCR Tube, 250 Strips
3111-52	Opaque White 96-well Semi-skirted PCR Plate, 25 Plates
Premix & Reagent	
K-6200	<i>AccuPower® Greenstar™</i> qPCR PreMix, <i>Exicycler™</i> 8-well strip, 50 µl, 12 strips
K-6203	<i>AccuPower® Greenstar™</i> qPCR PreMix, <i>Exicycler™</i> 96 -well plate, 50 µl, 1 plate
K-6253	<i>AccuPower® 2X Greenstar™</i> qPCR Master Mix / 100Rxn, 50 µL reaction
K-6254	<i>AccuPower® 2X Greenstar™</i> qPCR Master Mix / 200Rxn, 50 µL reaction
K-6600	<i>AccuPower® Plus DualStar™</i> qPCR PreMix, <i>Exicycler™</i> 96, 12 strips, 50 µl
K-6603	<i>AccuPower® Plus DualStar™</i> qPCR Master Mix(2X), 2.5ml, 100 rxn

Warranty

This Bioneer brand product, as supplied and distributed by Bioneer Corporation, is warranted by Bioneer against manufacturing defects in materials and workmanship for a limited warranty period of one year.

Product	<i>Exicycler™</i> 96 Real-Time Quantitative Thermal Block
Catalog No.	A-2060-1
Serial No.	
Date of Purchase	___ / ___ / ____ (dd/mm/yy)
Warranty Period	For 12 months from purchasing date

1. How to request warranty service

Please fill out the service request form attached to this manual and submit it to us by fax or mail. For prompt service, please have the problem log and the experimental file ready before contacting us. For more details, please contact Bioneer Customer Service Center or your local distributor. You may call us at +81-42-930-8777 for minor problems. The service request result will be notified to you within 7 business days and the system will be repaired or replaced within 1~3 weeks.

2. Repairs under warranty

During the one-year warranty period, Bioneer will repair all defective products free of charge.

3. Exclusion from warranty

The product is excluded from warranty if:

- The product has been found to be defective after expiry of the warranty period.
- The product has been subjected to misuse, abuse, or unauthorized repair, whether by accident or other cause.
- Product is damaged beyond repair due to natural disaster.

Service Request Form			
Product	Exicycler™ 96 Real-Time Quantitative Thermal Block		
Catalog No.	A-2060-1	Serial No.	
Date of request			
Date of purchase			
Service Issue	* Please list one service issue or concern per line		
	Issue 1		
	Issue 2		
	Issue 3		
	Issue 4		
Customer Information	Name		
	Company		
	Name		
	Contact	Phone:	Fax:
	E – mail		

Revision History

Rev. No.	Rev. Date	Reason	Revision contents	etc
1.0	21/July/2014	First issue	First description	
1.1	11/July/2016	Document Form changes	BQ-042-101-01 Rev.1 (2015-11-06)	
1.2	8/Dec/2016	Document Form changes	BQ-042-101-01 Rev.2 (2016-11-04)	

● Bioneer Worldwide

Bioneer Corporation

Address 8-11 Munpyeongseo-ro, Daedeok-gu, Daejeon, 34302, Republic of Korea
Tel +82-42-930-8777 (Korea: 1588-9788)
Fax +82-42-930-8688
E-mail sales@bioneer.com
Web www.bioneer.com

Bioneer Inc.

Address 1301 Marina Village PKWY, Suite 110, Alameda, CA 94501, USA
Tel +1-877-264-4300 (Toll-free)
Fax +1-510-865-0350
E-mail order.usa@bioneer.com
Web us.bioneer.com

Bioneer R&D Center

Address Korea Bio Park BLDG #B-702, 700 Daewangpangyo-ro, Bundang-gu, Seongnam-si
Gyeonggi-do, 13488, Republic of Korea
Tel +82-31-628-0500
Fax +82-31-628-0555
E-mail sales@bioneer.co.kr
Web www.bioneer.co.kr