

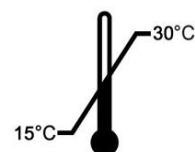
ExiProgen™

Fully Automated Protein Synthesis & RNA/DNA Prep System



REF

A-5041



Research Use Only



ExiProgen™

Fully Automated Protein Synthesis & RNA/DNA Prep System

User's Guide

Version No.: 1.1 (2017-04)

Please read all the information in this booklet before using the *ExiProgen™* instrument



Bioneer

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

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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



MANUFACTURE R



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

EUROPEAN REPRESENTATIVE E



: MT Promedt Consulting GmbH
Altenhofstr. 80
D-66386 St. Ingbert, Germany
Phone: +49 6894 581020

PRODUCT

: *ExiProgen™*,
Fully Automated Protein Synthesis & RNA/DNA Prep system

CATALOG NO.



A-5041

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I. Getting Started

Thank you for purchasing the *ExiProgen™*.

Bioneer strives to provide the best results to our customers at any time.

This manual contains practical guidelines and cautions to be taken regarding the *ExiProgen™*.

Please read this manual carefully and thoroughly before using the *ExiProgen™*.

Website

Please visit us online at <http://www.bioneer.com> to obtain more information about the *ExiProgen™*.

General information

- *ExiProgen™* is a trademark of Bioneer Corporation.
- The information contained in this manual is under copyright protection. It is unlawful to reproduce part or all of the contents of this manual without the expressed written consent of Bioneer Corporation.
- Bioneer Corporation reserves the right to alter, modify and/or otherwise make changes to the instrument and manuals without prior notice.
- *ExiProgen™* can be used with a PC, connected through a LAN cable, for the updated protocol to be downloaded into the *ExiProgen™* and to be installed on it. Please refer the [page 43](#) in this manual.
- User's precaution is strongly recommended when using the UV Lamp installed in the *ExiProgen™*. Details can be found in Safety warning and Precautions.
- You must use the supplied accessories and tubes.
- *ExiProgen™* must be used only for research purpose.

Safety Labels Description on the *ExiProgen™*

| | |
|----------|---|
| English | Please pull out/push in the base plate carefully to avoid possible overflow from the waste tray. |
| Francais | Afin d'éviter le débordement du bac à déchets, veuillez faire attention lorsque vous tirez et remettez en place la plateau de base. |
| English | Do NOT open the door during instrument's operation. You can be injured your hands or body. |
| Francais | Ne pas ouvrir la porte pendant la durée des opérations des instruments. Risque de blessures corporelles. |

Symbols on the *ExiProgen™*

Safety Symbols on the *ExiProgen™*

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



Hazards or dangerous actions that may result in burn.
Hot surface area. Do NOT Touch.



Please pull out/push in the base plate carefully to avoid possible overflow from the waste tray.



Do NOT open the door during instrument's operation. You can be injured your hands or body.

Electrical Symbols on the *ExiProgen™*

The following table describes the electrical symbols that may be displayed on the *ExiProgen™*.



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



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



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



Indicates a protective grounding terminal that must be connected to earth ground of power cord.



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 *ExiProgen™*

The following symbol (WEEE) applies to the *ExiProgen™* placed on the European market.



Do not dispose of *ExiProgen™* as unsorted municipal waste.

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



European Union customers:

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

About the *ExiProgen*™

ExiProgen™ is a breakthrough in synthetic biology allowing for the synthesis of one to 16 proteins per run. DNA, in the form of plasmid or linear PCR product, is added to the system and Bioneer's coupled transcription/translation *E. coli* extract then synthesizes the protein. The crude protein extract is further purified, using His-Tag engineered into the proteins. *ExiProgen*™ can also purify Nucleic Acids from several sources, making it one of the most versatile systems available.

An integrated 3.5 " touch screen enables easy operation. On-screen messages also display detailed process Information such as, protocol details and user information. Optimized protocols for routine protein synthesis and nucleic acid extraction are preloaded in the *ExiProgen*™. Simply select a protocol from the touch screen depending on sample type. A built-in heating block in *ExiProgen*™ facilitates sample lysis. The heating block can achieve and maintain sample temperatures of 40°C ~90°C. Highly pure DNA or RNA can be purified with Bioneer's proprietary silica magnetic bead technology.

The magnetic beads feature extremely high binding capacity for Protein, DNA and RNA due to a wide surface area on the round-shape bead.

The contamination shield designed to protect the assay from cross-contamination during instrument operation. Any time the pipette tips are moving, the contamination shield will slide under the tips, therefore eliminating the possibility of intra-assay cross-contamination which is a must when working with multiple samples.

A built-in UV lamp activates automatically when an extraction run has completed. This automatic sterilization prevents and eliminates the risk of cross-contamination.

The cooling block preserves the extracted molecular diagnostic and protein synthesis kit tubes in 8°C ~40°C.

Intended purpose

Protein synthesis and purify DNA or RNA from such diverse sources of human or animals as bacteria, blood, tissues, and plants.

II. Safety Warnings and Precautions

The warnings and precautions stated below are for the correct and safe operation of the instrument. Please heed all information for your safety. Bioneer Corporation does not assume responsibility for non-compliance with the safety warnings and precautions stated below.



Hazards or dangerous actions that may result in severe injury.



Hazards or dangerous actions that may result in minor injury or damage.



Hazards or dangerous actions that may result in burn.



Hazards or dangerous actions that may result in electronic shock.

1. General Precautions for User



- 1) Make sure that the power supply (100–240V, ~50/60Hz) is correctly connected to the power adapter and, the power adapter is correctly connected to the instrument. Incorrect connection of the power adapter and the power supply can result in instrument damage or failure to turn on.
- 2) This instrument is intended for nucleic acid extraction and protein expression/purification. Please use the instrument for these purposes only.
- 3) The instrument may stop if the **LCD panel is touched** while the instrument is connected to a PC via LAN cable and operating. If operating the instrument via PC software, please allow for the instrument to finish its programmed movement before operating the LCD panel.
- 4) Do not turn the PC off or disconnect the LAN cable connected to the PC to the instrument. Data communication error can result in instrument malfunction and can affect the results of your experiment.
- 5) Please install the instrument on a flat and level surface.
- 6) Do not operate the instrument with wet hands as this may result in electric shock or instrument malfunction. Please touch the power adapter cord with dry hands.
- 7) If the instrument is stopped either from operator error including improper accessory insertion or manually halting the instrument during normal operation, you must re-initialize the instrument before pulling out the Base Plate. Pulling out the Base Plate without prior initialization can lead to instrument damage from movement interferences such as the Heating Block or other accessories stopped in motion. If Buffer Cartridges are inserted into the Base Plate, please reinitialize the instrument or pull out the Buffer Cartridges to make sure the Heating Block is not in the way of normal Base Plate movement.
- 8) Avoid placing objects in front and rear of the instrument, as fan blockage may reduce the efficiency of the Cooling Block performance.
- 9) Avoid any obstruction or foreign material in front of the lower-front side Cooling Fan mesh. Foreign objects can hinder normal Cooling Fan operation, and it may lead overheating of parts or cause fire.

2. Precautions regarding the electrical environment



- 1) If the power cord is loose, do not use the instrument. Power cord overheating may result in shock or fire.
- 2) Do not operate multiple instruments out of a single wall outlet. The load may cause overheating and may 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 cable 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 Cable should not be repaired with insulating tape. Water can still get inside.
- 7) If you use other power cord, it should be adequate for the electrical capacity for the *ExiProgen™* (250V, 16A, 0.75mm², VDE).
- 8) Plugs should match the socket outlets.
- 9) Unplug the power cord from the *ExiProgen™* when not in operation for a long period of time to prevent the possibility of fire by overheating.
- 10) The Adapter provided by our company must be used(FSP GROUP INC. AC Input: 100–240VAC, 2.3~0.8A, 50/60Hz, DC Output: 24VDC, 7.5A, Pin1,2: +, Pin3, 4: –, UL).
- 11) *ExiProgen™* 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.

3. Precautions Regarding the Operation Environment



- 1) Avoid placing objects in front and rear of the instrument.
- 2) Avoid installing the instrument in a dusty environment. Excessive dust may cause malfunction or damage to the instrument.
- 3) Avoid operating the instrument near heat sources. This can cause fire.
- 4) Avoid operating the instrument near sources of water or damp locations. This can cause electrical shock, fire or instrument malfunction.
- 5) Do not install near sources of flammable or corrosive gas. In a case of a gas leak, do not touch the power plug. Open the window and ventilate the area. Sparks from the power plug can cause fire and/or explosions.
- 6) Do not disassemble or modify the instrument in any way. This can result in fire, electrical shock or malfunction, and also voids the manufacturer's warranty.

4. Precautions and Warnings Regarding Instrument Installation



- 1) This instrument is a precision device. Do not install the instrument in a location exposed to direct sunlight.
- 2) Install the instrument on a flat and solid surface that does not move.
- 3) While installing the instrument, make sure at least 15 cm separate the instrument from the nearest wall.
- 4) Take cautions not to damage the cooling fan mesh (located on the front–bottom) while installing.

5. Precautions and Warnings Regarding Instrument Operation



- 1) Dust off the power cord and connect to the instrument firmly and securely. Incomplete electrical contacts may cause fire.

- 2) Operate the instrument within ambient temperature range of 15°C~30°C. Excessive exposure to heat will negatively affected the instrument and the experiment results.
- 3) Operate the instrument within the recommended humidity range (20~80%, no condensation). Humid conditions may cause corrosion or malfunction.
- 4) Do not place any object directly next to or behind the instrument. The instrument may malfunction.
- 5) This instrument contains precisely machined parts. Do not drop and handle with care. Improper handling of the instrument may compromise performance and cause safety hazards.
- 6) While the instrument is not in use for a long period of time, turn the instrument off and unplug from the wall outlet.
- 7) Take caution not to damage the cooling fan mesh located on the lower-front of the instrument. If the mesh is damaged and the Cooling Fan does not work, the Cooling Fan motor and cooling element may overheat and cause fire.
- 8) The instrument automatically turns off the UV lamp and stops operation when the instrument door is open. However, in case this safety measure fails, do NOT expose your eyes or skin to direct UV light.

6. Precautions and Warnings Regarding Product Usage and Maintenance



- 1) This product should only be used for nucleic acid extraction, protein expression/purification and automatic aliquoting. Do not use the instrument for any other purpose other than explicitly stated in the User Manual.
- 2) You must use the supplied accessories and tubes.
- 3) Do not modify or delete instrument-related information installed within the instrument.
- 4) Do not use a sharp object to operate the LCD screen.
- 5) The instrument UV lamp will only operate if the door is completely shut. Make sure the door sensor is free of any material or obstruction.
- 6) Do not use powerful detergents or solvents to clean the outside of the instrument. This may cause discoloration of the instrument. If such chemicals are spilled on the instrument, immediately clean with a soft cloth.
- 7) Do not keep the instrument in highly humid environment. *Moisture Damage* is classified as water damage and is not covered by the manufacturer's warranty. Also, an instrument with moisture damage may not be repairable.
- 8) Disassembly and/or modification of the instrument voids the manufacturer's warranty and a service request may be refused.
- 9) Do not unplug the power adapter from the instrument while the instrument is in use. This may cause damage to the instrument.
- 10) If a burning smell is detected or the instrument seems to be excessively hot during operation, immediately stop using the instrument and call your service representative.
- 11) Do not drop or impact the instrument. This causes direct instrument damage and will void the manufacturer's warranty.
- 12) Always verify that the Heating Block is in initial position before pulling out the Base Plate. If the Base Plate is pulled out while the Heating Block is not in its initial position, the interference in movement can cause Heating Block and other internal component damage and lead to instrument malfunction. Since installed Buffer Cartridges obscure the view, re-initialize the instrument or take out the Buffer Cartridges and visually inspect the position of the Heating Block before pulling out the Base Plate.
- 13) Take caution not to damage the cooling fan mesh located on the lower-front side of the instrument. If the mesh is damaged and the Cooling Fan does not work, the Cooling Fan motor and cooling element may overheat the instrument and cause fire.
- 14) When there is liquid in the Waste Tray in the equipment, take extra caution to push-in or pull-

out the base plate so the liquid does NOT overflow on the surface of the instrument inside. If happens, it may damage the instrument or cause the electrocution.

7. UV Lamp



- 1) UV lamp operation may create ozone molecules. For user safety, the instrument is pre-programmed to operate the UV lamp for 15 minutes only. Please do NOT operate the UV lamp in excess.
- 2) UV rays can seriously damage your eyes and skin when exposed directly (or even indirectly). When working with the UV lamp, make sure you are wearing proper protective equipment.
- 3) The UV Lamp provided by our company should be used (Input: 15 V; 4 W, UV output: 1,2 W, 0,42 A).

8. Precautions regarding moving and lifting instrument



- 1) The instrument is to be moved and positioned only by the personnel or vendor specified in the applicable site preparation guide. If you decide to lift or move the instrument after it has been installed, do not attempt to lift or move the instrument without the assistance of others, the use of appropriate moving equipment, and proper lifting techniques.
- 2) Improper lifting can cause painful and permanent back injury. Depending on the weight, moving or lifting an instrument may require two or more persons.

9. Warnings regarding biological and chemical hazard safety



- 1) Biological samples such as tissues, body fluids, and blood of humans and other animals have the potential to transmit infectious diseases. Follow all applicable local, state/provincial, and/or national regulations. Wear appropriate protective eyewear, clothing, and gloves.
- 2) Before handling any chemicals, refer to the Material Safety Data Sheet (MSDS) provided by the manufacturer, and observe all relevant precautions.
- 3) Always determine what chemicals have been used in the instrument before changing reagents or instrument components. Wear appropriate eyewear, protective clothing, and gloves when working on the instrument.
- 4) Read and understand the Material Safety Data Sheets (MSDS) provided by the chemical manufacturer before you store, handle, or work with any chemicals or hazardous materials.
- 4) Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (for example, safety glasses, gloves, or protective clothing).

III. Waste Safety Warning & User Maintenance

This instrument is used with a special kit that contains large amounts of chlorine compounds for the purpose of extracting a nucleic acid. Furthermore, the nucleic acids extracted through this instrument have a shelf life about their sequence information. So, the residual nucleic acid can give a bad effect to the performance of the instrument. Minimizing this kind of risk, it is strongly recommended to follow the appropriate procedures for the prevention and progression themselves after referring the below.

NOTE

- Power off the *ExiProgen™*, then remove the adaptor.
- Allow the instrument to cool until the heater&magnetic block and elution block reach room temperature.

CAUTION

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

WARNING

During instrument operation, the temperature of the heater&magnetic block can be as high as 100°C, and the temperature of the heater block can be as high as 50°C. Before performing the procedure, keep hands away until the heater&magnetic block and elution block reach room temperature

1. Notice after using the instrument immediately

CAUTION

After using the instrument, do pay attention about the base plate because its Waste Tray contains large amounts of waste reagent which could be spilled over if you don't have particular attention to the operation.

- 1) If you operate the base plate rapidly, the overflow of waste reagent will contaminate inside of the instrument, so that the false positives will appear from the next experiment.
- 2) The waste is corrosive to stainless steel and other metals because the waste contains large amount of chlorine compounds.
- 3) Accidental happening an overflow, request A/S to clean it because the disassembly of the base plate is required to remove the inside pollution in it.

2. Cleaning solution for internal and external space of the instrument

- 1) Use distilled Water (DW), 70% ethanol, nucleic acid digestion solution (5% nitric acid, 1% lox blancher, DNAzap), and a dual lox blancher as a cleaning solutions. But be careful with DNAzap because it corrodes the metal. When you are using a lint free cloth and paper towel to soak in the cleaning solution, keep them wet or moist but not to drop the solution onto the equipment. Also, do not spray the cleaning solution directly onto the equipment.

3. Case of contamination

NOTE

When a contamination occurs, take appropriate action immediately to prevent accumulative

pollution and damage possibly being happened.

- 1) For cleaning the accessory, refer to the Accessory cleaning equipment.
- 2) If a waste solution did not go into the base plate, clean it using a paper towel treated with nucleic acid digestion solution. After that, clean it again using a wet a paper towel with DW, dry it using a dry paper towel, and sterilize the inside of instrument with UV lamp immediately.
- 3) If the waste went into the base plate, you have to request A/S to clean it because the disassembly of the base plate is required.

4. Waste Treatment

All the wastes and the remaining reagents must be disposed in accordance with legal procedures.

5. Cleaning the Touch-screen

Clean the touch-screen with any commercially available LCD cleaning product.

Be careful not to scratch the screen.

6. Returning an *ExiProgen*™ for Service

- 1) Decontaminate the instrument.



If the base plate become contaminated with radioactivity, use a commercially available decontaminant to remove the contamination. If the base plate cannot be decontaminated, the instrument cannot be returned to Bioneer for service.

- 2) Complete of instrument decontamination.
- 3) Fax or e-mail(sales@bioneer.com) the service request form to the customer center.
- 4) Pack the instrument in the provided packaging, without any accessories or adaptor. Include service request form in the box.

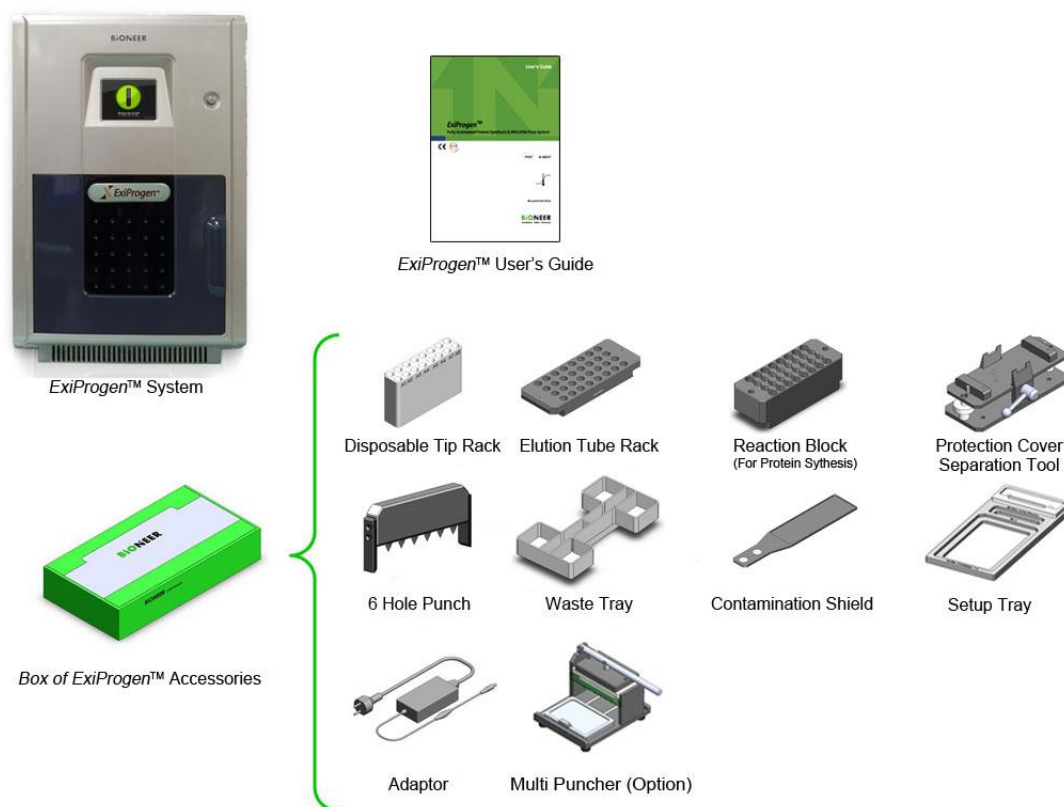


Repairs for instruments without the service request form are delayed.

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

IV. System Components and Specifications

1. System Box of *ExiProgen™* Accessories



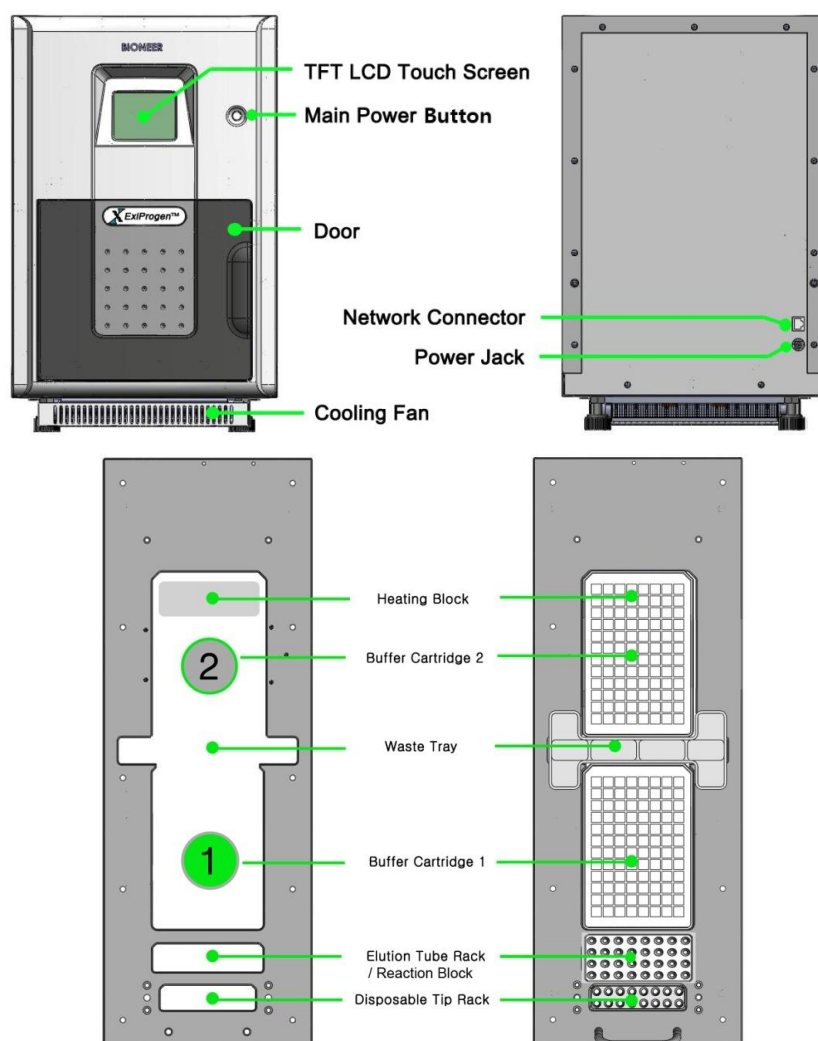
| Part Name | Cat. No. | Qty. |
|--|----------|------|
| <i>ExiProgen™</i> | A-5041 | 1 ea |
| User's Guide | | 1 ea |
| Waste Tray | | 1 ea |
| Reaction Block (For Protein synthesis) | | 1 ea |
| Elution Tube Rack | | 1 ea |
| Disposable Tip Rack | | 1 ea |
| Contamination Shield (For Nucleic Acid Extraction) | | 1 ea |
| Protection Cover Separation Tool | | 1 ea |
| 6 Hole Punch | | 1 ea |
| Adaptor | | 1 ea |
| Power Cord | | 1 ea |

| | | |
|------------------------|--|------|
| Setup Tray | | 1 ea |
| Multi Puncher (Option) | | – |

2. Specifications

| | |
|----------------------------------|---|
| Dimensions | 320mm (W) x 500mm (H) x 535mm (D) 12.6in(W) x 19.69in(H) x 21.06in(D) |
| Weight | 27 kg (59.53lbs) |
| Operating temperature | 15 – 30°C (59 – 86°F) |
| Operating humidity | 20 – 80%, no condensation |
| Operating system | Stand alone |
| Electrical (Voltage / Frequency) | Adaptor: AC Input: 100–240VAC, 2.3–0.8A, 50/60Hz, DC Output: 24VDC, 7.5A Instrument: DC Input: 24VDC, 7.5A |
| Network support | TCP/IP protocol |
| User interface | 320 x 240 touch screen TFT LCD |

3. System Views



V. Installation

1. Site Requirements

The *ExiProgen™* is for indoor use. Ensure that the installation site:

- Meets the spatial and weight requirements
- Meets environmental requirements
- Is within 1.5 m (4.92 ft) of the 250VA power receptacle
- Is away from water

2. Materials Required Materials

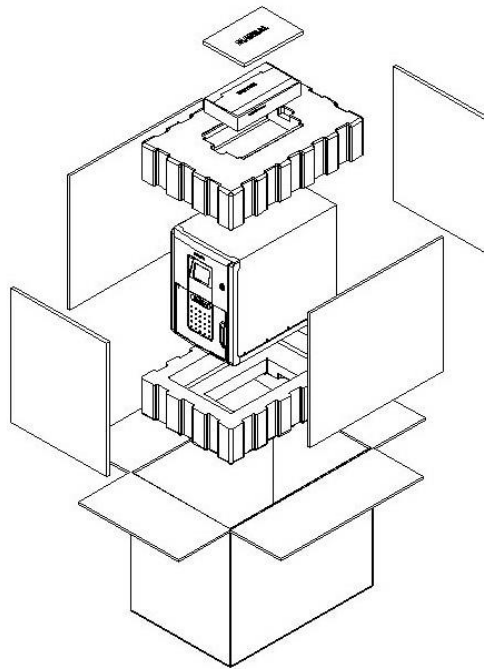
- Scissors, pocket knife, or box cutter

3. Unpacking the *ExiProgen™*



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

- 1) To unpack the *ExiProgen™*:



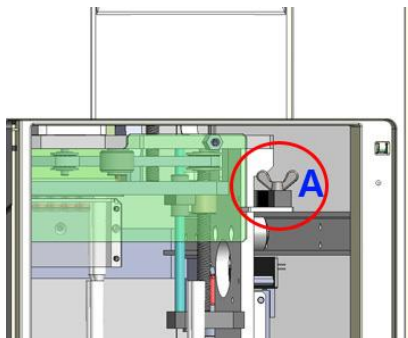
- a) Cut the straps securing the instrument box.
- b) Cut the tape securing the top flaps of the instrument crate, then open the flaps.
- c) Remove the *ExiProgen™* Accessories from the instrument and set them aside.
- d) Lift and remove the cover from the instrument crate.
- e) Remove the packing material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



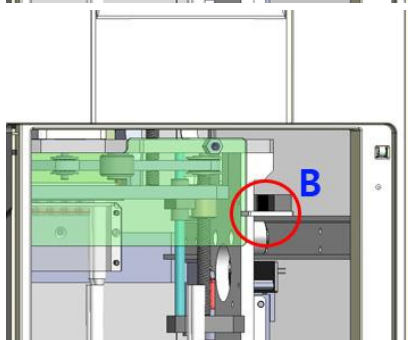
If the *ExiProgen™* is damaged, note the location and appearance of the damage, then contact Bioneer Technical Support or your service representative.

- 2) Move the *ExiProgen™* 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 bag containing the *ExiProgen™* Accessories, then verify that it contains:
 - *ExiProgen™* User Guide
 - Adaptor, Power Cord, Power 10A/125V North America or Power 10A/220V Europe

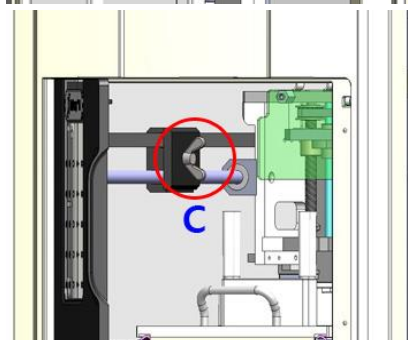
4. Remove Locking Screw



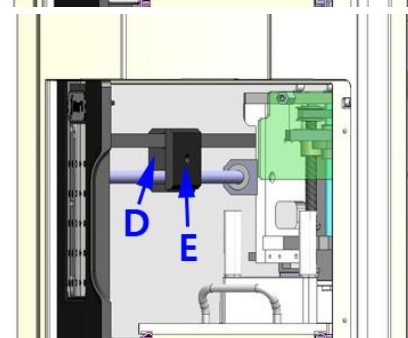
1. Open the door and remove the Screw (A) from the guide rail at the right side.



2. Remove the holding plate (B) from the rail and the Syringe Block.

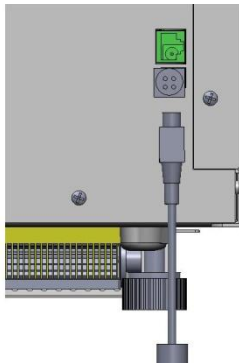


3. Remove the Screw (C) from the holding block which immobilizes the belt at the left side.



4. Separate the holding block (D, E) from the belt and remove it.

5. Power ON



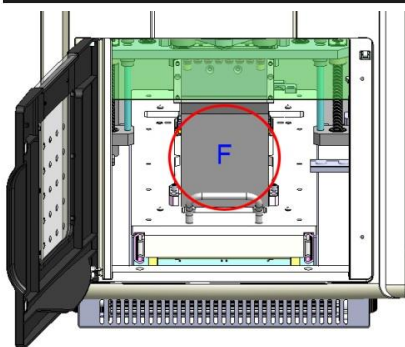
1. Connect the power adaptor to the rear of the instrument. Make it sure that the flat side of power adaptor faces 9 o'clock side.



2. Turn on the instrument by pushing the Main Power Button once. A graphical power button will be displayed on the LCD touch-screen to indicate that normal power is on.



3. Press the power button on the LCD screen to initialize the instrument. A progress bar on the lower portion of the LCD touch-screen will indicate that the initialization progress is going on.
4. The main screen (with its pictures) will be appeared when the initialization is done.



5. Open the door and remove the **Sponge block (F)** from the Base Plate.
6. Remove the sponge block (G) from the inside of the door.

VI. Protein Synthesis

1. Before Starting Protein Synthesis



1. Press '**STORE OFF**' on the LCD to turn the cooling block on. '**STORE OFF**' will be changed to '**STORE ON**', and the Cooling Block maintains the Elution Tube Rack at a low temperature to keep the *E.coli* extract refrigerated.

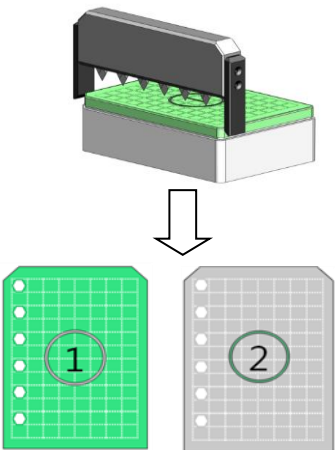


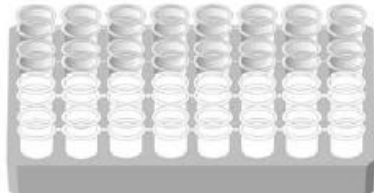
VI. Protein Synthesis (Continued)

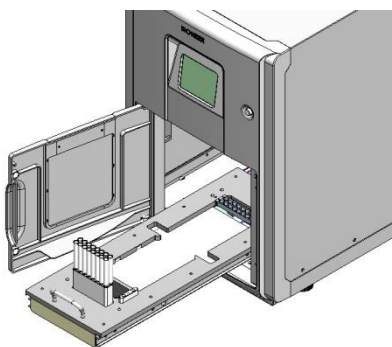
2. Preparation of Samples

(1) Batch Mode

– kit ; *ExiProgen™* EC1 Protein Synthesis Kit (K-7300 – K-7302)

Note) Detail can be found in the user's guide of each kit.

| | |
|---|---|
|  | <ol style="list-style-type: none"> 1. Determine which well(s) will be used in the Buffer Cartridge ① and ②, depending on the number of samples and how many wells left (if Cartridges have been used previously). Using 6 hole punch or a multi puncher (optional), make holes in the sealing film of 'Buffer Cartridge' ① and ②, corresponding to the relative location and number of tubes and tips for Protein Synthesis. <ul style="list-style-type: none"> ➤ Inspect the wells of the Buffer Cartridges and make sure all liquids are at the bottom of the wells. If necessary, grab the Buffer Cartridges and snap your wrist to bring down liquids that may be present on the well walls. ➤ 'Buffer Cartridges' are supplied in the protein synthesis Kit. |
|  | <ol style="list-style-type: none"> 2. Load the sample of template DNA into the 'Sample Loading Well' of buffer cartridge ②. |
|  | <ol style="list-style-type: none"> 3. Place the number of the <i>E.coli</i> extracts to be used during the experiment on the 'Elution Tube Rack', in the 3rd & 4th row corresponding to the punched wells in the Buffer Cartridges. <ul style="list-style-type: none"> ➤ '<i>E.coli</i> extract' is supplied in the EC1 protein synthesis Kit and you may cut the strips of necessary to match the number tubes to samples. ➤ Please be careful about the <i>E. coli</i> extracts NOT to be used for the protein synthesis experiment at this time. |
|  | <ol style="list-style-type: none"> 4. Place the number of the 'Elution Tubes' on the 1st & 2nd row of the 'Elution Tube Rack'. They will be used in order to collect the purified proteins. |



5. Place the number of '**Disposable Tips**' to be used in the '**Disposable Tip Rack**'.
 - Make sure that the relative location among the punched wells in Buffer Cartridges ① and ②, tubes of '*E. coli*' extracts, elution tubes and disposable tips.
6. Open the instrument Door and pull out the Base Plate.
7. Place 'Elution Tube Rack', 'Disposable Tip Rack', 'Buffer Cartridges', and 'Waste Tray' in the respective locations on the base plate according to the **CHECK LIST of Setup Procedure** (page 19).

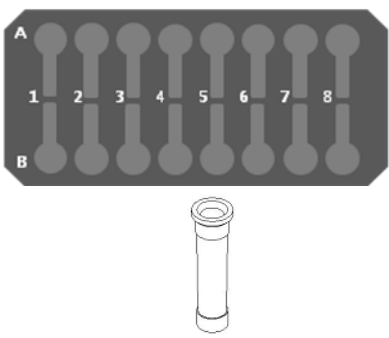
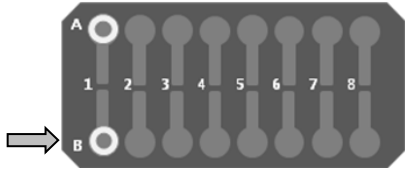
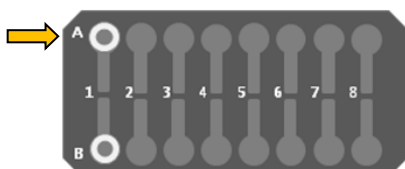
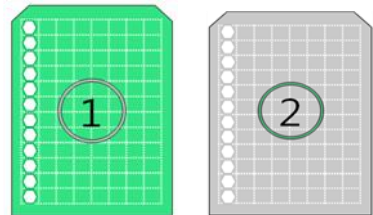
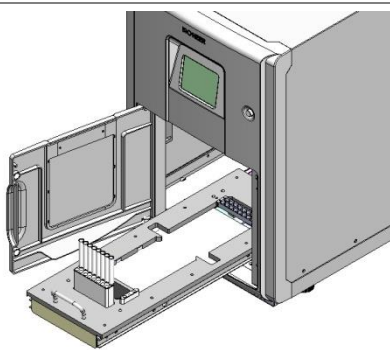
VI. Protein Synthesis (Continued)

3. Sample Preparation (Continued)

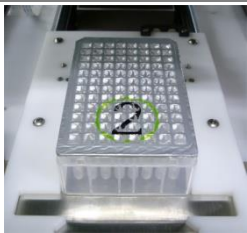
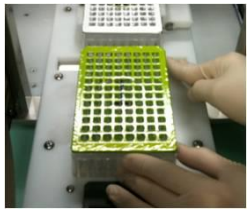

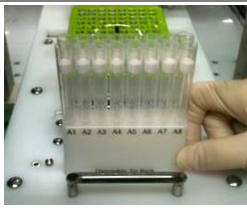


(2) Stepwise Mode

- Kits ; *ExiProgen™* EC1–Maxi Protein Synthesis Kit (K–7310), *ExiProgen™* EC1–TF Protein Synthesis Kit (K–7320), and *ExiProgen™* EC2 Protein Synthesis Kit (K–7330)

Note) Detail can be found in the user's guide of each kit.


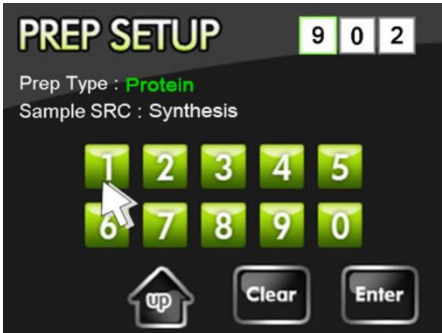
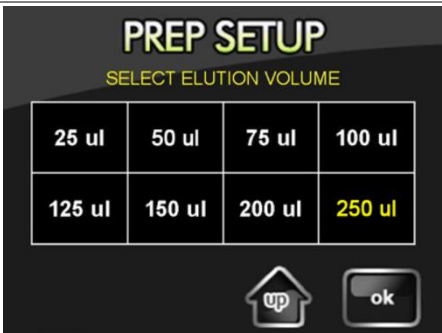
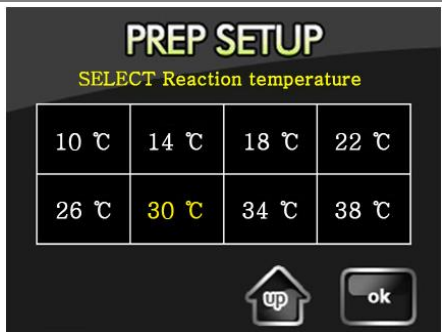
| | |
|---|--|
|  | <ol style="list-style-type: none"> After take the necessary number of samples, preparing double the number 'Dialysis Tubes' and 'Reaction Block'. <ul style="list-style-type: none"> 'Dialysis tubes', dipped in a solution of 20% ethanol, are provided in each kit is individually packaged. Therefore, remove ethanol in the tube before the use, and the internal and external sides of the tube are washing with sterile distilled water. |
|  | <ol style="list-style-type: none"> After finishing to wash two tubes per sample, insert them into the wells in the A and B rows of the reaction block for protein synthesis. Fill the dialysis tube at the B row with 0.5 ml of sterile distilled water. |
|  | <ol style="list-style-type: none"> Mix '<i>E.coli</i> extract', 'Master mixture', 'DEPC-treated distilled water', and 'Template DNA' as shown in each kit's manual. Fill the mixture into the 'Dialysis Tube' at the A rows in the 'Reaction Block'. |
|  | <ol style="list-style-type: none"> Punch holes in the sealing film of Buffer Cartridge ① and ② corresponding to the relative location and number of tubes, using the punch tool. <ul style="list-style-type: none"> Unlike 'Batch Mode Kit', please punch all the wells in each row which will be used at the 'Stepwise Mode'. |
|  | <ol style="list-style-type: none"> Place the number of 'Disposable Tips' to be used in the 'Disposable Tip Rack'. <ul style="list-style-type: none"> Make sure that disposable tips are placed at B row (closer to the inside of the machine), NOT A row. Open the instrument Door and pull out the Base Plate. Place 'Elution Tube Rack', 'Disposable Tip Rack', 'Buffer Cartridges' and 'Waste Tray' in the respective locations on the base plate according to the CHECK LIST of Setup Procedure (page 19). |

※ CHECK LIST of Setup Procedure

| | |
|---|--|
|  | <p>1. Insert Buffer Cartridge ② on the Base plate.</p> <ul style="list-style-type: none"> ➤ Make sure that the Buffer Cartridge fits snugly and exactly into its place. Misplacement of the Buffer Cartridge may result in instrument break down and malfunction. |
|  | <p>2. Insert Buffer Cartridge ① on the Base plate.</p> <ul style="list-style-type: none"> ➤ Make that sure the Buffer Cartridge fits snugly and exactly into its place. Misplacement of the Buffer Cartridge may result in instrument break down and malfunction. |
|  | <p>3. Place the Elution tube rack (the Batch mode) or the Reaction Block (the Stepwise mode) on the Base plate.</p> <ul style="list-style-type: none"> ➤ Make sure that the direction and location of the Elution tube rack is correct. |
|  | <p>4. Place the Disposable tip rack on the Base plate.</p> <ul style="list-style-type: none"> ➤ Make sure that the direction and location of the Disposable tip rack is correct. |
|  | <p>5. Place the Waste tray into the gap between Buffer Cartridges ① and ②.</p> |
|  | <p>6. Push the Base Plate in completely until it fits into its original position by 'clicking', and close the door.</p> <ul style="list-style-type: none"> ➤ Press the 'ok' button to complete. |

VI. Protein Synthesis (Continued)

3. Running the Protein Synthesis

| | |
|---|---|
|  | <ol style="list-style-type: none"> 1. Press the 'START' button to access the PREP SETUP screen. |
|  | <ol style="list-style-type: none"> 2. Referring to the code list of purchased Kit manual, input the three-digit code applicable to your desired protein. 3. Verify the 'Prep Type' and 'Sample SRC' of the three-digit code you have entered. 4. Press the 'Enter' button to access the 'elution volume' selection menu. |
|  | <ol style="list-style-type: none"> 5. Select the desired volume of protein-elution solution, between 25 µl and 250 µl, from 'Select Elution Volume' of the LCD touch-screen. 6. After selecting the desired 'elution volume' press 'ok' to complete PREP SETUP. |
|  | <ol style="list-style-type: none"> 7. Select the desired temperature during protein synthesis, between 10°C and 38°C, from 'Select Reaction Temperature' of the LCD touch-screen. Generally 30°C is appropriate for the most of proteins. <ul style="list-style-type: none"> ➤ This selection is not applied to the Batch mode. 8. After selecting the desired 'reaction temperature' press 'ok' to complete PREP SETUP. |

CHECK LIST


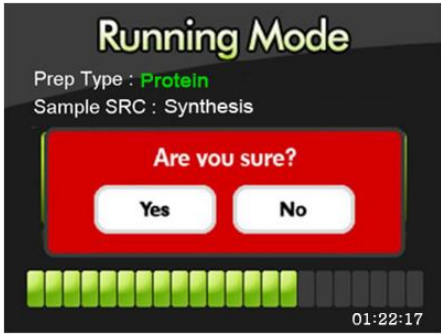


1. Place the Buffer Cartridge 2
2. Place the Buffer Cartridge 1
3. Place the Elution Tube Rack
4. Place the Disposable Tip Rack
5. Place the Waste Tray



9. Following the check list, make sure that every components inside the machine are placed correctly.
10. Click 'ok'.



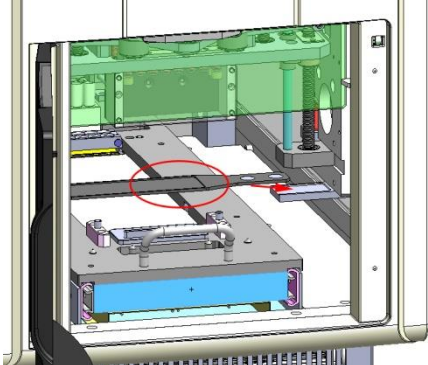

VI. Protein Synthesis (Continued)

4. RUN (Continued)

| | |
|---|--|
|  | <p>11. Check the name of the prep type and sample source type on the Running Mode screen, then press the 'RUN' button.</p> <ul style="list-style-type: none"> ➤ Progress of the expression/purification run can be checked through the progress bar on the lower portion of the LCD touch-screen. |
|  | <p>12. You may press the 'STOP' button during the run, if you want to terminate the protein expression/purification.</p> <ul style="list-style-type: none"> ➤ If you press 'STOP' during an expression/purification run, a popup promptly asking you ('Are you sure?') will appear. Select 'Yes' to terminate the run, or 'No' to cancel the stop and to proceed the protein expression/purification running. ➤ You may select 'PAUSE' to temporarily stop the run and 'RUN' to resume. (Please make it to #13.) |
|  | <p>13. After the expression/purification run is complete, "Work Completion" screen will be shown. Pull out the Base Plate and remove the Elution tubes, Buffer Cartridges and all racks from the Base Plate. After removing all the accessories, push the Base Plate back in completely and close the door.</p> <p>14. You are given three options at this point:</p> <ul style="list-style-type: none"> ➤ Still remains same work: Repeat the current protocol. ➤ Do other work: Perform another <i>ExiProgen™</i> work under the different protocol for either protein or nucleic acid works. ➤ Finish: Finish and exit. |
|  | <p>15. If the automatic UV-sterilization option is enabled, a popup screen will appear warning you not to open the door as UV sterilization will be in progress. Details can be found in page 37.</p> <p>16. Press the 'START' button to initiate sterilization.</p> <ul style="list-style-type: none"> ➤ Select 'SKIP' if you wish to skip sterilization. <p>17. The sterilization process takes 15 minutes. Progress can be checked through the progress bar.</p> <p>18. Press the 'Store On' button to turn the Cooling Block and cooling fan off.</p> |

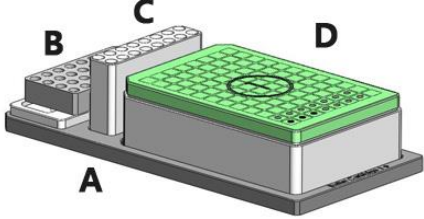
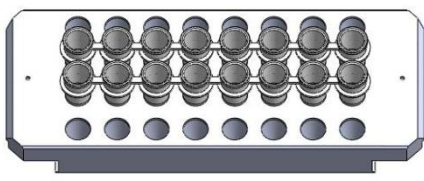
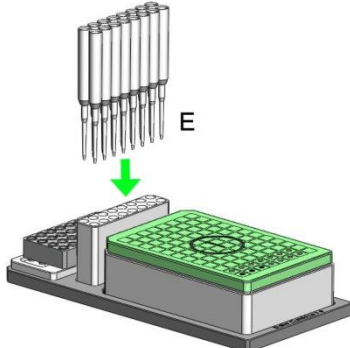
VII. RNA/DNA Extraction

1. Installation of Contamination Shield

| | |
|---|---|
|  | <ol style="list-style-type: none"> From the 'Menu' screen, click 'MISC SET'. <ul style="list-style-type: none"> This will bring the Syringe block to the front of the instrument for Contamination shield attachment. <div data-bbox="719 689 871 730" data-label="Image">  </div> <p>In order to use contamination shield, it must be installed correctly.</p> |
|  | <ol style="list-style-type: none"> Place the contamination shield on the lower-right side of the Syringe block. <ul style="list-style-type: none"> Contamination shield has a magnet which can attach itself in the wrong orientation. Please make sure the Contamination shield is attached correctly. |
|  | <ol style="list-style-type: none"> From the 'Menu' screen, click 'MISC SET'. <ul style="list-style-type: none"> The base plate moves back to the initialization position (inside the instrument). |

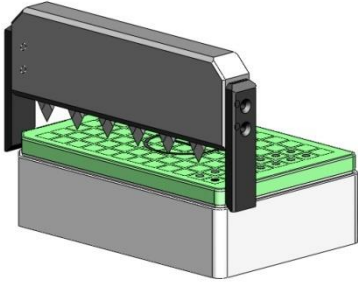
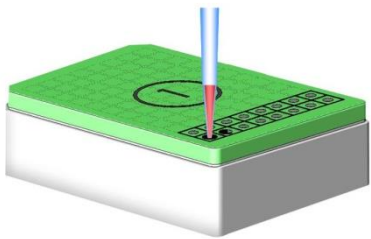
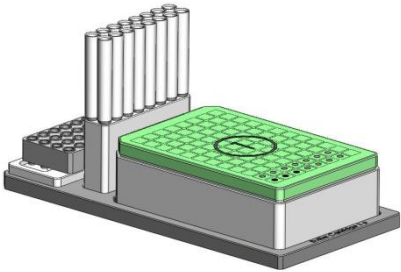
VII. RNA/DNA Extraction (continued)

2. Preparation of Samples

| | |
|---|--|
|  | <ol style="list-style-type: none"> 1. Place 'Setup Tray (A)' on a flat surfaced desk. 2. On the Setup tray, put on the 'Buffer Cartridge ① (D)', 'Elution Tube Rack (B)', 'Disposable Tip Rack (C)'. <ul style="list-style-type: none"> ➤ The 'Setup Tray' and 'Disposable Tip Rack' are supplied with the <i>ExiProgen™</i>. ➤ The 'Buffer Cartridge', 'Disposable Tip' and 'Elution Tube' are supplied in the DNA/RNA Extraction Kit. |
|  | <ol style="list-style-type: none"> 3. Check DNA/RNA extraction Kit for the samples and the nucleic types to be extracted. Determine the number and location of hole(s) on the Buffer Cartridges and of elution tube(s) in the elution tube rack, according to the number of samples and which wells are intact in the Buffer Cartridges. 4. Place the number of Elution Tubes to be used on the Elution Tube Rack. <ul style="list-style-type: none"> ➤ You may cut the strips if necessary to match the number tubes to samples. ➤ Make sure that front and rear orientation of the Elution tube rack is correct before inserting the tubes. |
|  | <ol style="list-style-type: none"> 5. Place the number of Disposable Tip (E) for the elution onto the Disposable tip rack. |



VII. RNA/DNA Extraction (continued)

2. Sample Preparation (Continued)

| | |
|---|--|
|  | <ol style="list-style-type: none"> 6. Punch holes in the sealing film of Buffer Cartridge ① corresponding to the relative location and number of tubes and tips, using the 6 Hole punch tool. 7. Punch holes in sealing the film of Buffer Cartridge ② using the 6 Hole Punch tool in the same pattern as Buffer Cartridge ①. 8. Place back the punched Cartridge on the Setup Tray. |
|  | <ol style="list-style-type: none"> 9. Load Insert the sample into 'Sample Loading Well' of Buffer Cartridge ① carefully. |
|  | <ol style="list-style-type: none"> 10. Complete the preparation for extraction. |

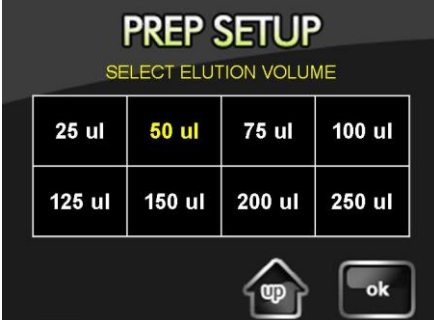

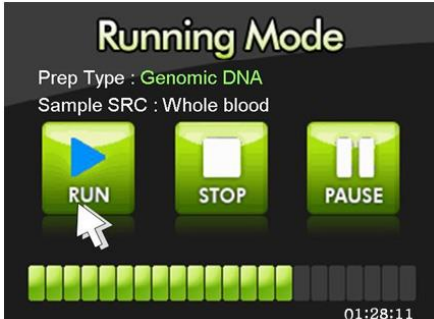
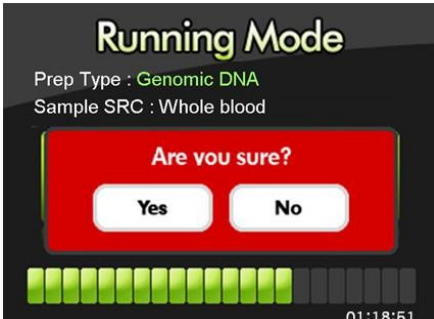
VII. RNA/DNA Extraction (continued)

3. RUN

| | |
|---|---|
|  | <ol style="list-style-type: none"> 1. Press the 'Store Off' button to turn the Cooling Block and cooling fan on. The Cooling Block maintains the Elution Tube Rack at a low temperature to keep the eluted nucleic acid–diagnostic kit mix refrigerated. |
|  | <ol style="list-style-type: none"> 2. Press the 'START' button to access the PREP SETUP screen. |
|  | <ol style="list-style-type: none"> 3. Referring to the code list of purchased Kit manual, input the three–digit code applicable to your desired nucleic acid and sample source type. 4. Verify the 'Prep Type' and 'Sample SRC' of the three–digit code you have entered. 5. Press the 'Enter' button to access the 'elution volume' selection menu. |

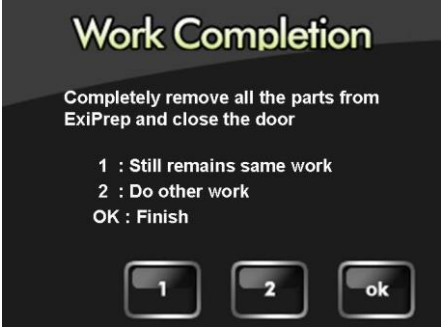

VII. RNA/DNA Extraction (continued)

3. RUN (Continued)

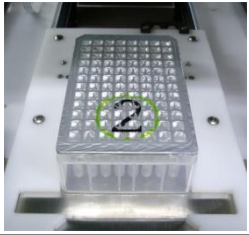
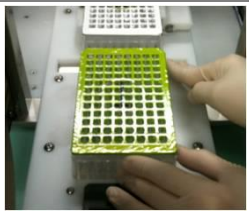
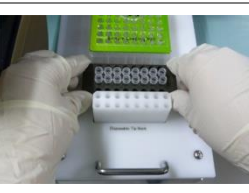
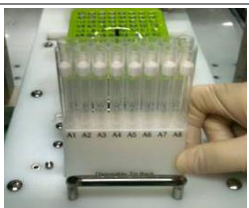
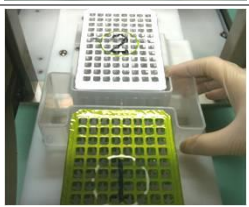
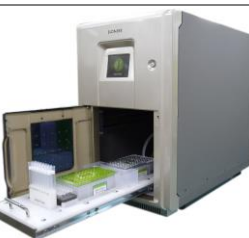
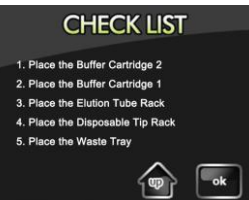
| | |
|---|---|
|  | <ol style="list-style-type: none"> 6. Select the desired 'elution volume' from the LCD touch-screen. 7. After selecting the desired 'elution volume' press 'ok' to complete PREP SETUP. |
|  | <ol style="list-style-type: none"> 8. Open the instrument door and pull out the Base Plate. 9. Place all racks and Buffer Cartridges in their respective locations on the Base Plate according to the CHECK LIST (page 29) on the LCD touch-screen. |
|  | <ol style="list-style-type: none"> 10. Verify the name of the target nucleic acid type and sample source type on the Running Mode screen, and press the 'RUN' button. <ul style="list-style-type: none"> ➤ Progress of the extraction run can be checked through the progress bar on the lower portion of the LCD touch-screen. |
|  | <ol style="list-style-type: none"> 11. You may press the 'STOP' button during the run to terminate the extraction. <ul style="list-style-type: none"> ➤ If you press 'STOP' during an extraction run, a popup prompt asking you whether you are sure ('Are you sure?') will appear. Select 'Yes' to terminate the run, or 'No' to cancel the stop and to proceed with the extraction run. 12. You may select 'PAUSE' to temporarily stop the run and 'RUN' to resume. |

VII. RNA/DNA Extraction (continued)

3. RUN (Continued)

| | |
|--|---|
|  | <p>13. After the extraction run is complete, pull out the Base Plate and remove the Elution tubes, Buffer Cartridges and all racks from the Base Plate. After removing all accessories, push the Base Plate back in completely and close the door.</p> <p>14. You are given three options at this point:</p> <ul style="list-style-type: none"> ➤ Still remains same work: Repeat the current protocol. ➤ Do other work: Perform an extraction run using a different protocol for another nucleic acid and sample source type. ➤ Finish: Finish and exit. |
|  | <p>15. If the automatic UV-sterilization option is enabled, a popup prompt will appear warning you not to open the door as UV sterilization is in progress. Details can be found in page 37.</p> <p>16. Press the 'START' button to initiate sterilization</p> <ul style="list-style-type: none"> ➤ Select 'SKIP' if you wish to pass sterilization. <p>17. The sterilization process takes 5 minutes. Progress can be checked through the progress bar.</p> <p>18. Remove the contamination shield. Detail can be found on page 23.</p> <p>19. Press the 'Store On' button to turn the Cooling Block and cooling fan off.</p> |

※ CHECK LIST of Setup Procedure

| | |
|--|--|
|  | <p>1. Insert Buffer Cartridge ② on the Base plate.</p> <ul style="list-style-type: none"> ➤ Make sure that the Buffer Cartridge fits snugly and exactly into its place. Misplacement of the Buffer Cartridge may result in instrument break down and malfunction. |
|  | <p>2. Insert Buffer Cartridge ① on the Base plate.</p> <ul style="list-style-type: none"> ➤ Make sure that the Buffer Cartridge fits snugly and exactly into its place. Misplacement of the Buffer Cartridge may result in instrument break down and malfunction. |
|  | <p>3. Place the Elution tube rack on the Base plate.</p> <ul style="list-style-type: none"> ➤ Make sure that the direction and location of the Elution tube rack is correct. |
|  | <p>4. Place the Disposable tip rack on the Base plate.</p> <ul style="list-style-type: none"> ➤ Make sure that the direction and location of the Disposable tip rack is correct. |
|  | <p>5. Place the Waste tray into the gap between Buffer Cartridges ① and ②.</p> |
|   | <p>6. Push the Base Plate in completely and close the door.</p> <ul style="list-style-type: none"> ➤ Press the 'ok' button to complete. |





VIII. *ExiProgen™* Setup

1. Main Menu

- Once the initialization has completed successfully, the LCD touch-screen will display the MENU as shown below.
- Please contact Bioneer Customer Service or your local sales representative if the initialization progress bar does not change for over 5 minutes during initialization or if the MENU screen does not appear after initialization.



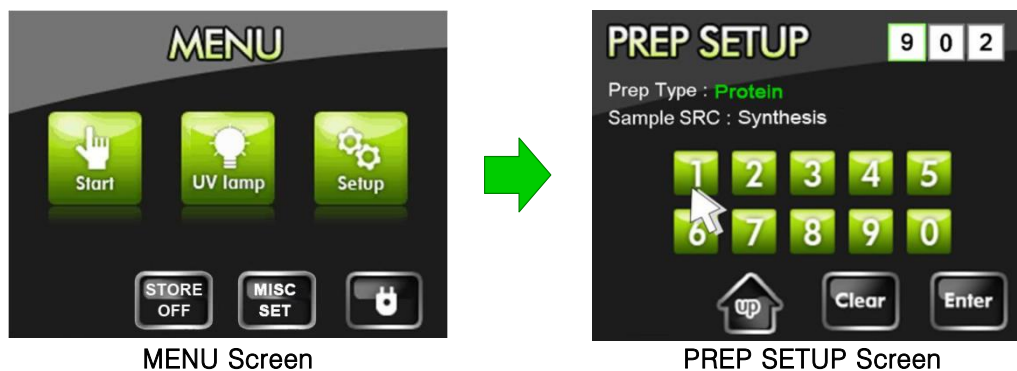
Main Menu

| Icon | Description |
|---|--|
|  | <ul style="list-style-type: none"> Network Connection <ul style="list-style-type: none"> This icon allows you to determine if the <i>ExiProgen™</i> is connected to the PC. If the icon is present, it means that the instrument is connected to the PC via network. |
|  | <ul style="list-style-type: none"> Cooling Fan Operation <ul style="list-style-type: none"> The Cooling Fan icon allows you to determine the status of the cooling fan. 'STORE OFF' means that the cooling fan is not operating, and 'STORE ON' means that the cooling fan is currently running. In order to keep the diagnostic kits refrigerated, you must press this icon on the LCD touch-screen. |
|  | <ul style="list-style-type: none"> Installation of Contamination Shield <ul style="list-style-type: none"> This icon is to determine the status of the syringe block for setting the contamination shield. |
|  | <ul style="list-style-type: none"> Power <ul style="list-style-type: none"> This icon is to be pressed when power rebooting the instrument. |

VIII. ExiProgen™ Setup (continued)

1. Main Menu (continued)

1) PREP SETUP

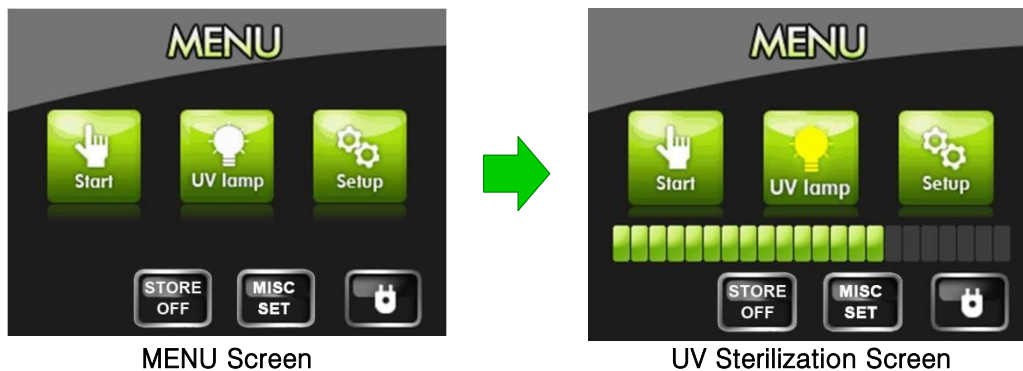


- Selecting 'Start' from the Main Menu will bring up the 'PREP SETUP' screen where you can enter the three-digit code for the extraction and sample source type.
- Refer to the code list of Kit Manual to select the three-digit code applicable to your desired nucleic acid and sample source type.

VIII. *ExiProgen*™ Setup (continued)

1. Main Menu (continued)

2) UV sterilization (UV lamp)

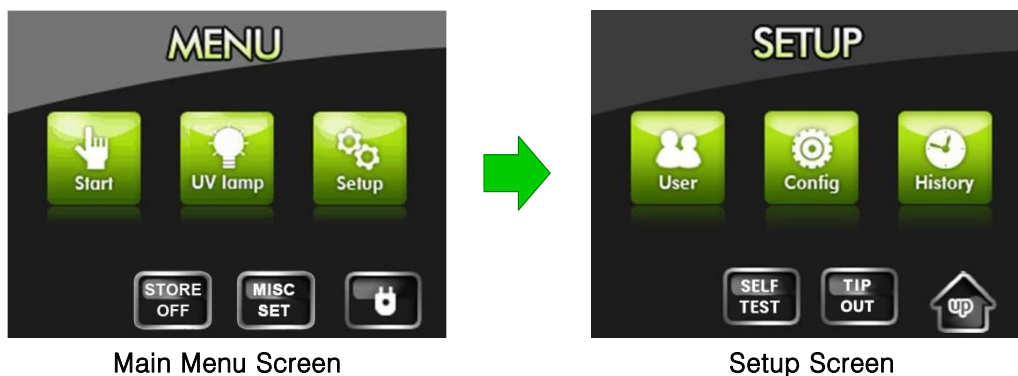


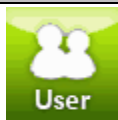
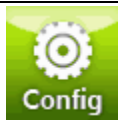



- Use the built-in UV-lamp to sterilize the internal cavity of the instrument.
- Press the '**UV lamp**' icon to initiate the UV sterilization process. The icon will turn yellow as UV sterilization proceeds.
- The sterilization runs for 15 minutes. The progress can be tracked through the progress bar displayed on the bottom portion of the LCD touch-screen. To cancel the sterilization process, press the '**UV lamp**' button again.

VIII. ExiProgen™ Setup (continued)

1. Main Menu (continued)

3) System setup menu (SETUP)






| Icon | Description |
|---|---|
|  | <ul style="list-style-type: none"> ▪ User registration menu <ul style="list-style-type: none"> ➤ You may create new accounts through this menu. Details on account creation can be found in page 34. |
|  | <ul style="list-style-type: none"> ▪ System configuration menu <ul style="list-style-type: none"> ➤ Allows you to restrict non-registered users from accessing features such as UV sterilization and system preferences. Details on system configuration can be found in page 38. |
|  | <ul style="list-style-type: none"> ▪ History <ul style="list-style-type: none"> ➤ Enabled by selecting the user login option. ➤ Allows you to audit up to 99 most recent runs by displaying information such as user ID, operation record and the instrument status (successful or cancelled) of a particular run. ➤ Details can be found in page 35. |
|  | <ul style="list-style-type: none"> ▪ Self Test <ul style="list-style-type: none"> ➤ This icon is for testing each motor initialization and heater block Temperature. |
|  | <ul style="list-style-type: none"> ▪ Tip Out <ul style="list-style-type: none"> ➤ This icon is for removing the Disposable Tips from the instrument Syringe Block. Pressing this icon will release the tips immediately. |

VIII. ExiProgen™ Setup (Continued)

2. Registering a New User

ExiProgen™ provides a user login option restricting the use of the instrument to registered users only. Enabling the user login option will limit non-user access to the instrument. Do not forget your user ID if you have enabled the user login option.


| | |
|---|---|
|  | 1. Press the ' Setup ' button to access the SETUP menu. |
|  | 2. Press the ' User ' button to access the User Registration menu. |
|  | 3. Enter a 6-digit user ID using the keypad on the LCD touch screen and press ' Enter ' to save the ID. <ul style="list-style-type: none"> ➤ Delete: Delete the last number entered. ➤ Clear: Delete all numbers entered. ➤ Enter: Save the numbers entered. |
|  | 4. Verify the user ID and press ' ok ' to complete the registration. <ul style="list-style-type: none"> ➤ If the login option is enabled, non-registered use will have limited access to the instrument. ➤ Do not forget your user ID. |

※ Up to 50 users can be registered. You can manage non-used user IDs using the administrator menu ([page 39](#)).


VIII. ExiProgen™ Setup (continued)

3. Viewing the Run History


If the login option is enabled, the user ID, process type and run status of each run is saved. Up to 99 most recent runs are saved in memory.

The MENU screen features a dark background with the word 'MENU' in large, green, stylized letters at the top. Below it are three green square buttons with white icons: a hand for 'Start', a lightbulb for 'UV lamp', and two interlocking gears for 'Setup'. At the bottom, there are three smaller, rounded rectangular buttons: 'STORE OFF', 'MISC SET', and a button with a white padlock icon.

1. Press the '**Setup**' button to access the SETUP menu.

The SETUP screen has a dark background with the word 'SETUP' in large, green, stylized letters at the top. Below it are three green square buttons with white icons: two people for 'User', a gear for 'Config', and a clock for 'History'. At the bottom, there are three smaller, rounded rectangular buttons: 'SELF TEST', 'TIP OUT', and a button with a white house icon and the text 'up'.

2. Press the '**History**' button to view the instrument run history.

The History screen has a dark background with the word 'History' in large, green, stylized letters at the top. Below it is a table with four columns: 'No.', 'User ID', 'Work', and 'Status'. The table contains five rows of data. At the bottom, there are four navigation buttons: a button with a white house icon and the text 'up', a left-pointing arrow with the text 'back', a right-pointing arrow with the text 'next', and a button with the text 'ok'.

3. The run history contains the following parameters:

- **No.:** Recent runs have a lower number.
- **User ID:** The 6-digit user ID.
- **Work:** An abbreviation of sample source and protocol type selected for that run.
- **Status:** Instrument report on whether nucleic acid extraction was successfully completed (OK), stopped during the run (Abort), or cancelled by the user (Canceled).

VIII. ExiProgen™ Setup (continued)

4. Managing the Login Mode

The instrument provides a login mode for restricting non-registered use. Without a user ID, you would have limited access to instrument functions. Do not forget your user ID.

| | |
|---|--|
|  | <p>1. Press the 'Setup' button to access the SETUP menu.</p> |
|  | <p>2. Press the 'Config' button to access the System Setup menu.</p> |
|  | <p>3. Press the 'User' button to enable login mode.</p> <ul style="list-style-type: none"> ➤ If the login mode is enabled, a popup prompt (User Mode ON) appears and the user icon will turn blue. ➤ Press the 'User' button again to disable user login mode. A popup prompt (User Mode OFF) appears and the user icon will turn white. |

※ Entering an invalid user ID three consecutive times with user login mode enabled will shut down the system. Press the '**Power**' icon on the LCD touch-screen to restart.

VIII. ExiProgen™ Setup (continued)

5. Managing the Automatic UV–Sterilization Mode







The instrument provides an automatic UV–Sterilization mode to sterilize the instrument after every Protein synthesis and DNA/RNA prep run.

| | |
|---|---|
|  | <ol style="list-style-type: none"> 1. Press the 'Setup' button to access the SETUP menu. |
|  | <ol style="list-style-type: none"> 2. Press the 'Config' button to access the System Setup menu. |
|  | <ol style="list-style-type: none"> 3. Press the 'UV lamp' button to enable automatic UV sterilization. <ul style="list-style-type: none"> ➤ If automatic UV–sterilization is enabled, a popup prompt (UV Mode ON) appears and the UV lamp icon will turn yellow. ➤ Press the 'UV lamp' button again to disable the mode. A popup prompt (UV Mode OFF) appears and the UV Lamp icon will turn white. |

VIII. ExiProgen™ Setup (continued)

6. Configuring the System


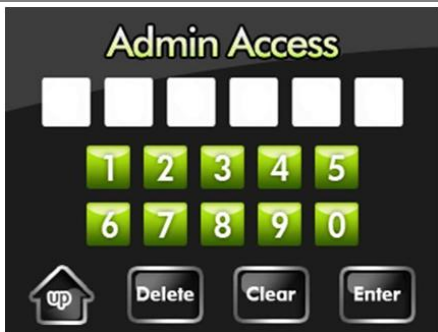


Only the single user with a registered administrator ID is able to configure the system. Do not forget the administrator ID.

| | | | |
|---|---|--|--|
|  | <p>1. Press the 'Config' Button from the System Setup menu to access the System Config menu.</p> | | |
|  |  Calibrates the screen position |  Manages user IDs as well as administrator ID |  Accessible only by authorized engineers |
|  | <p>2. Screen: Calibrates the screen position</p> <ul style="list-style-type: none"> ➤ Calibrate the screen position relative to touching. ➤ Press and hold the circle at the upper left corner with a blunt tool for 2 seconds. ➤ Press and hold the circle at the bottom right corner with a blunt tool for 2 seconds. | | |

NOTE Factory (A/S menu): Only authorized service engineers may access this menu to service the instrument.



VIII. ExiProgen™ Setup (continued)

7. Management of the Administrator

|  | <div>1. Press the 'Admin' button from the System Config menu to access the Admin Access menu.</div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|---|---|---|---|---|---|---|---|----|----|---|---|---|---|---|---|--|--|--|--|--|---|---|---|---|---|---|--|--|--|--|--|---|---|---|---|---|---|--|--|--|--|--|---|--|--|--|--|--|--|--|--|--|--|---|--|--|--|--|--|--|--|--|--|--|---|
|  | <div>2. Enter the 6-digit administrator ID using the keypad on the LCD touch-screen.</div> <div>3. Press the 'Enter' button.</div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | <div>4. The Admin Menu screen includes an option to delete user IDs or change the administrator ID.</div> <div>➤ Select 'User list delete (1)' to delete unused IDs.</div> <div>➤ Select 'Administrator password change (2)' to change the factory default administrator ID.</div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  <table><thead><tr><th>ID</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th><th>9</th><th>10</th></tr></thead><tbody><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table> | ID | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | 3 | 3 | 3 | 3 | 3 | 3 | | | | | | 4 | | | | | | | | | | | 5 | | | | | | | | | | | <div>5. User list delete menu (User List)</div> <div>➤ Registered User: Displays the number of registered users.</div> <div>➤ Select the user ID you wish to delete and press 'ok' to confirm deletion.</div> <div>➤ Use the 'back' or 'next' buttons to navigate the pages.</div> |
| ID | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 2 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 3 | 3 | 3 | 3 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

VIII. ExiProgen™ Setup (continued)

7. Management of the Administrator (continued)

| | |
|--|--|
|  | <p>6. Administrator ID change menu</p> <ul style="list-style-type: none"> ➤ Enter a new 6-digit administrator ID using the keypad in the middle of LCD touch-screen and press 'Enter' button to save. |
|  | <p>7. Press the 'ok' button to save new administrator ID after verifying the new administrator ID.</p> <ul style="list-style-type: none"> ➤ You may now use the new administrator ID to delete user IDs or setup and configure the system. ➤ Do not forget new administrator ID. |

8. Protection Cover Separation Tool



The handle on the front of the Protection Cover Separation Tool is fixed in the right direction. Before use, as shown in the figure, turn the handle half-turn to the left and adjust it so that **Elution Tube Rack** can be installed.

Also, if the handle on the front of the **Protection Cover Separation Tool** is loose, turn it all the way to the right as in the initial state and use it according to the above procedure.



1) Prepare the **Protection Cover Separation Tool**.



2) Place the **Elution Tube Rack** from *ExiPrep™16 Dx* on the **Protection Cover Separation Tool** carefully.



3) Turn the handle on the front of the **Protection Cover Separation Tool** clockwise to secure the **Elution Tube Rack** to the **Protection Cover Separation Tool**.



4) Remove the **Protection Cover** from the **Elution Tube Rack**.



If excessive force is applied, the **Elution Tube** may be impacted. Move the **Protection Cover** slowly up and down to remove it.



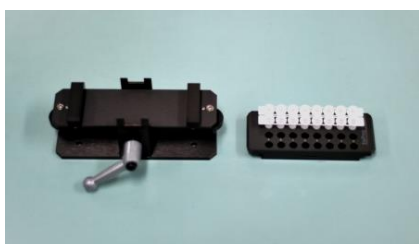
5) Ensure that the tube is securely removed from the **protection cover**.



- 6) Turn the handle of the **Protection Cover Separation Tool** counterclockwise to remove the **Elution tube Rack**.



- 7) The **Elution Tube Rack** can now be removed from the **Protection Cover Separation Tool**.



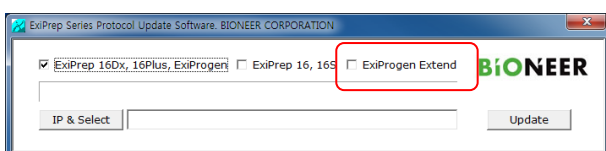
- 8) Remove the **Elution Tube Rack** from the **Protection Cover Separation Tool**.

IX. Updating the Software of ExiProgen™

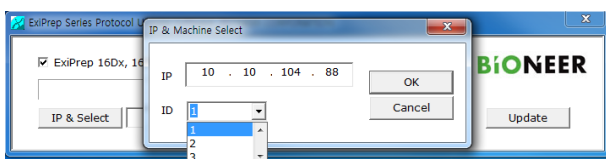
- Updating software may improve instrument functionality and install up-to-date protocols for protein synthesis and nucleic acid extraction.
- Please refer to the FAQ in our homepage or contact Bioneer Service Center, if updating does not progress as described below or if you have questions.

NOTE This program is NOT included with the instrument. If you want to the program, please request it to us. The program can be delivered to you through email as an attachment.

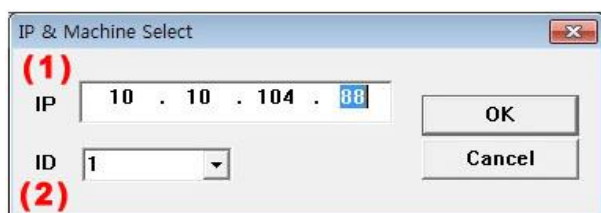
- (1) Connect the *ExiProgen™* to your computer using a **cross-type LAN cable** (sold separately).
- (2) Start the installation of the downloaded program below.
 - The default IP address for the *ExiProgen™* is 10. 10. 104. 88.



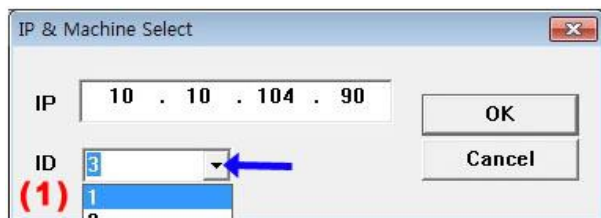
1. Execute the program.
2. Select the instrument type (*ExiProgen Extend*) to update the protocol on top of the window



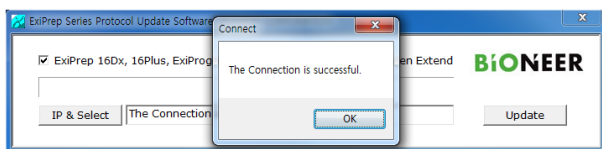
3. A new window 'IP & Machine Select' will appear with two boxes: IP and ID.



4. There are two ways of connecting to the instrument network.
 - Directly enter the IP address into the IP box (1) and select the instrument ID (2). For example, if the IP address is '10.10.104.88', select ID '1' and click 'OK'.



5. Clicking on the small down arrow (blue arrow) will enable you to select several instrument IDs with corresponding IP addresses. Click 'OK' to finish connecting to the instrument.

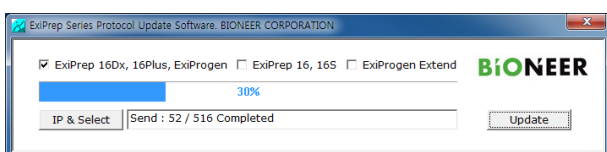


6. If the connection succeeds, the 'Connect Succeeded' prompt will be displayed.

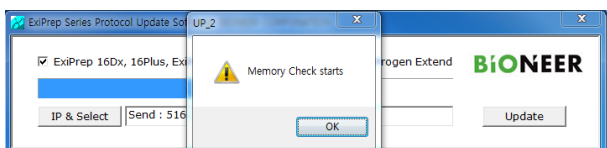
IX. Updating the *ExiProgen™* (Continued)



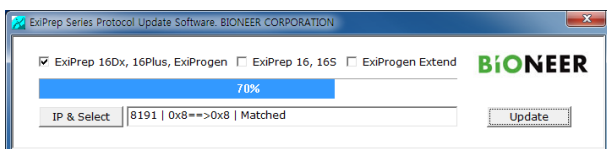
7. If the connection fails, the 'connect fail' prompt will be displayed. In this case, reboot the instrument and network hub, and verify that the network cable is connected correctly. Also verify the PC network settings including the IP address



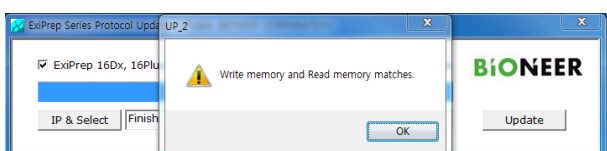
8. After the connection is completed, click the 'Update' button on the right side. Wait until the progress bar is full.
 - If the connection stops progressing, restart the update process from step 1.



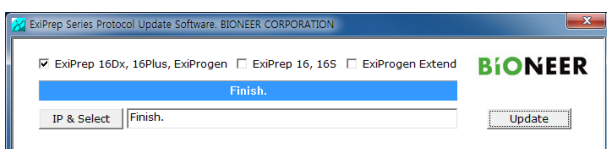
9. Once the connection process is done, 'Memory Check starts' window will pop up.
10. Click 'OK'.
 - If the connection stops progressing, restart the update process from step 1.



11. Once 'Memory Check' starts, the progress status bar will be displayed.



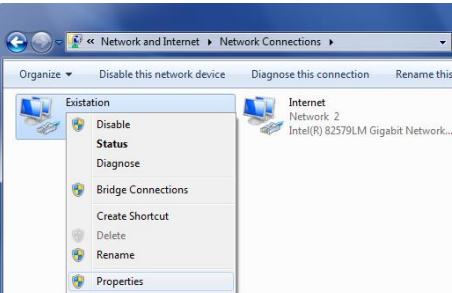
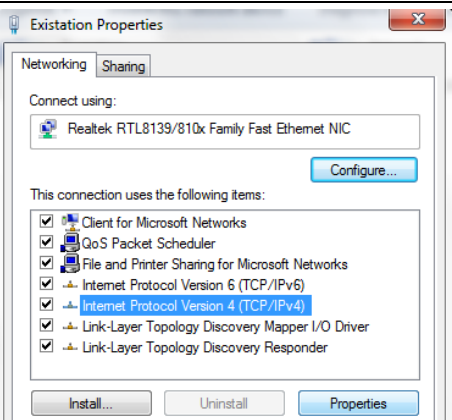
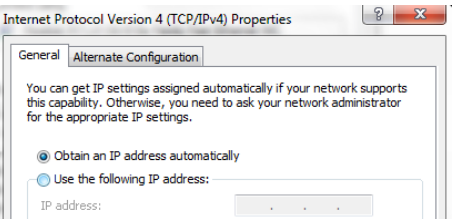
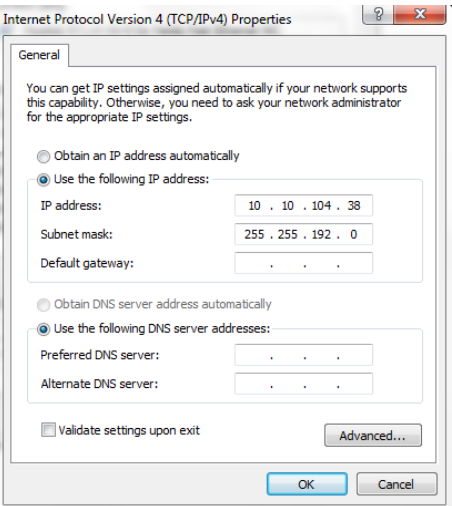
12. When the Memory Check finishes the progress, 'Write and Read memory check results to matches' window will pop up.
13. Press 'OK' button.



14. If you get the 'Finish' message on the progress bar, all the update has been done successfully.
15. Disconnect the LAN cable from the computer and the instrument.
16. Reboot the instrument and reconnect the LAN cable.

※ The IP address may change depending on the installation site and PC.

※ If the PC fails to connect to the instrument, try the following steps.

| | |
|---|--|
|  | <ol style="list-style-type: none"> 1. Right-click 'ExiStation' in the computer network connections menu. 2. Select 'Properties' from the popup menu. |
|  | <ol style="list-style-type: none"> 3. Select and highlight 'Internet Protocol Version 4 (TCP/IPv4)' and click 'Properties' to access TCP/IP settings. |
|  | <ol style="list-style-type: none"> 4. Click the 'Use the following IP address'. |
|  | <ol style="list-style-type: none"> 5. Enter the IP address, subnet mask as follows: IP address: 10. 10. 104. 38 Subnet mask: 255. 255. 192. 0 6. Click 'OK' to complete the network connection settings. |

X. Troubleshooting Guide

| Error | Solution |
|---|---|
| The Power is not on. | <ol style="list-style-type: none"> 1. Make sure the power connector is connected. 2. Check if the system is connected to the adaptor. 3. Check if the system power is pushed. 4. If everything above has been followed but the trouble is still there, contact After Service (and for the following items). |
| The Power is on but the system cannot initiate. | <ol style="list-style-type: none"> 1. Press the power button to block the power. 2. Check if the power was turned off abnormally. 3. When the system power was shut off abnormally, check if there are any residues in tips and/or accessories in the system. 4. Remove any residues that may distract operating the system. 5. Manually move the syringe block of the interior desktop in the center. 6. Turn the power on and check whether the system is initiating. |
| LCD Screen is not on. | <ol style="list-style-type: none"> 1. It may be interior problem of the system, call for the After Service. |
| The system does not operate even RUN button is pressed. | <ol style="list-style-type: none"> 1. Check if the bracket lock is removed. 2. Check if the system is initiating normally when the power is on. 3. Check if there are any residues or obstacles in the system that may interrupt operating. 4. Check if all the accessories are inserted correctly. 5. Check if other buttons in the LCD are working. |
| The system is running but does not operate correctly. | <ol style="list-style-type: none"> 1. Check if the base plate is placed correctly. 2. Check if there are remaining residues or any obstacles that may interrupt operating the system. 3. Check if all the accessories are inserted correctly. |
| The front door is not closed. | <ol style="list-style-type: none"> 1. Check if the base plate is placed correctly. 2. After holding the door to open and when releasing the door to be closed, check if the door is closed automatically by the spring. |
| The base plate does not slide in completely. | <ol style="list-style-type: none"> 1. Check if there are any obstacles or residues that may interrupt moving the base plate. 2. Check if all the accessories are inserted correctly. |
| The system is not working even if the door is closed. | <ol style="list-style-type: none"> 1. Check if base plate is located in the correct. 2. Check if the pair of magnet attached to the door is correctly attached. 3. Check if the switch installed at the end of the base plate slide rail is damaged when base plate is pulled out. |
| The base plate does not slide out completely. | <ol style="list-style-type: none"> 1. Check inside of the system if there are any obstacles or residues that may interrupt moving the base plate. 2. Check the front of the system if there are any obstacles or residues that may interrupt moving the base plate. |
| The accessories are not being able be inserted or placed. | <ol style="list-style-type: none"> 1. Check if all the accessories are located in the right position. 2. Check if there are any residues in each accessories and the |

| Error | Solution |
|--|---|
| | <p>rack.</p> <p>3. Check if any accessories and the rack's lock pins are bent or damaged.</p> |
| During the operation, the syringe block does not pin down the tips. | <p>1. Check if the door is completely closed.</p> <p>2. Check if the tip and the tip rack are inserted correctly.</p> <p>3. While inserting the tips, check if any residues or accessories are stuck.</p> <p>4. Check if 'Stop' or 'Pause' button is pressed.</p> <p>5. Check if the provided tips are inserted.</p> <p>6. Check if the tip is bent or damaged.</p> |
| Syringe Block is correctly equipped with the tips, but the block doesn't move. | <p>1. Make sure the front door is closed.</p> <p>2. When the block is being moved, check if any residues or accessories are stuck.</p> <p>3. Check if the cartridge is inserted correctly.</p> <p>4. Check if 'Stop' or 'Pause' button is pressed.</p> |
| The system stops while operating. | <p>1. Check if the power is not supplied into the system.</p> <p>2. Check if the Power switch has been pressed.</p> <p>3. In the lower part of LCD screen, check if there is a delay in the blue progress bar.</p> <p>4. Check if you have pressed 'Pause' by mistake.</p> |
| The system is running but there is an error. | <p>1. Check if wrong protocol has been used.</p> <p>2. Check if there is an error in the motor while operating during the movement of syringe block due to residues or accessories being stuck.</p> <p>3. Check if it is operating after rerunning the same program.</p> |
| The system is working but it does not do the elution. | <p>1. Check if Elution rack and tubes are inserted appropriately.</p> <p>2. Check if the tips are inserted completely.</p> <p>3. Check if the end of the tip is clogged.</p> <p>4. Check if sample is inserted into the cartridge.</p> <p>5. Check if there is any leakage in the syringe block.</p> |
| There is a leakage in the syringe block. | <p>1. Stop using the wells immediately and request of after service.</p> |
| The liquid is dripping in the bottom of the system. | <p>1. Check if the rack and the waste tray and other accessories are inserted in the right position.</p> <p>2. Check if there is a leakage in the syringe block.</p> |
| The heater is not working. | <p>1. Check if the rack and the waste tray and other accessories are inserted in the right position.</p> <p>2. Check if any solution is dripped in the base plate during the usage.</p> |
| There is a burning smell in the system. | <p>1. Disconnect the power and unplug the power connector immediately.</p> |
| UV Lamp does not work. | <p>1. Check if the door is closed completely.</p> |
| The Sample Block does not maintain a cold temperature. | <p>1. Inspect the power supply.</p> <p>2. Verify the Sample Block status through the LCD screen or PC software.</p> |
| The cooling fan does not function. | <p>1. Inspect the power supply.</p> <p>2. Verify the Sample Block status through the LCD screen or PC software.</p> |

| Error | Solution |
|----------------------------|--|
| Protocols are not updated. | 1. Check if the computer and the instrument are connected with LAN cable.2. Restart the computer and instrument. |

XI. Warranty

This instrument is warranted by Bioneer against manufacturing defects in materials and workmanship for a limited warranty period of one (1) year from the date you received your product. Bioneer will either (1) repair the product at no charge if a hardware defect is found or (2) exchange the product if the same hardware defect arises more than three times during the limited warranty period. Any other accessories other than the instrument itself are considered as consumables and warranted for three months. Spare parts for the instrument will be available for five years from the initial instrument release date. If a defect arises after the limited warranty period, shipping and handling charges may apply to any repairs or exchanges of the product undertaken by Bioneer.

Exclusions and limitations

This warranty does not apply: (a) to cosmetic damage, including but not limited to scratches, dents, and broken plastic on ports; (b) to damage caused by accident, abuse, misuse, flood, fire, earthquake or other external causes; (c) to a product or part that has been modified in any way without explicit written consent of Bioneer; or (d) to damage caused by any services performed by unauthorized engineers or service providers.

Obtaining Warranty Service

Please review this User Manual and access the online support referred to in the manual accompanying this product before requesting warranty service. If the product is still not functioning properly, contact Bioneer Customer Service at next page.

Service Request Form

| | | | |
|-------------------------|---|------------|------|
| Product | ExiProgen™, Fully Automated Protein Synthesis & RNA/DNA Prep system | | |
| Catalog No. | A-5041 | 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 | | |

● Bioneer Worldwide

Bioneer Corporation

Address 1 Munpyeongseo-ro, Daedeok-gu, Daejeon, 34302, Republic of Korea

Tel 2-42-930-8777 (Korea: 1588-9788)

Fax 2-42-930-8688

E-mail les@bioneer.com

Web ww.bioneer.com

Bioneer Inc.

Address 01 Marina Village PKWY, Suite 110, Alameda, CA 94501, USA

Tel -877-264-4300 (Toll-free)

Fax -510-865-0350

E-mail ler.usa@bioneer.com

Web .bioneer.com

Bioneer R&D Center

Address rea Bio Park BLDG #B-702, 700 Daewangpangyo-ro, Bundang-gu, Seongnam-si
reonggi-do, 13488, Republic of Korea

Tel 2-31-628-0500

Fax 2-31-628-0555

E-mail les@bioneer.co.kr

Web ww.bioneer.co.kr