

DuxCycler user's manual

(Ver 1.0)

PCR Thermal Cycler

“DuxCycler”

User's Manual



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We supply the **DuxCycler.exe S/W** for easy setup of the application S/W.

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1. Product information

About the system

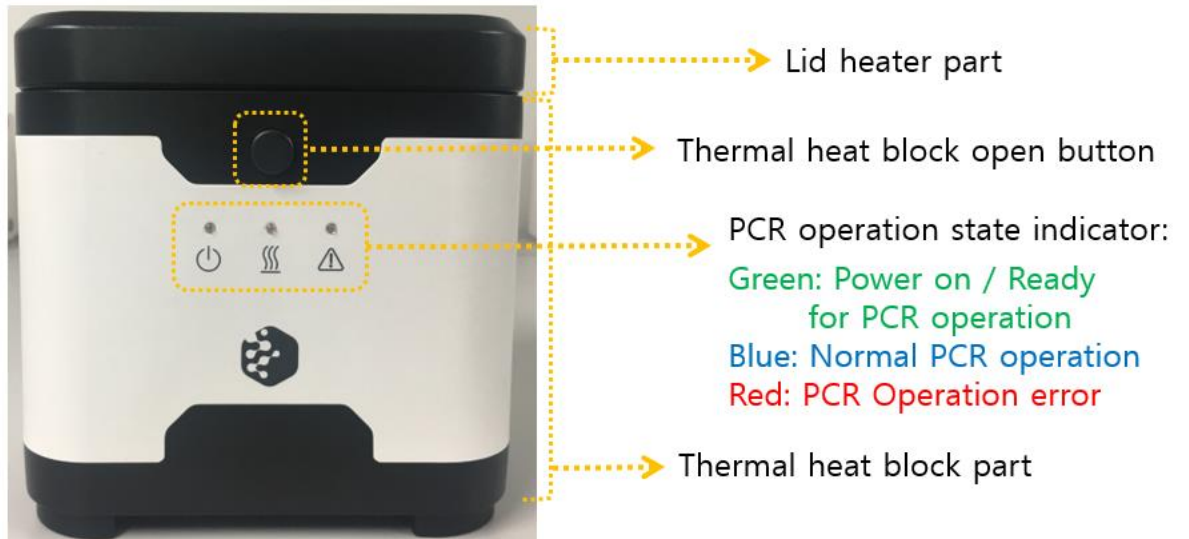
The DuxCycler allows simultaneously 25 samples of nucleic acids to amplify. The advanced IT manufacturing technology is applied for the affordable low-cost device of the conventional PCR system. The DuxCycler has comparable performance to the commercialized high performance PCR device. The compact dimension and various functions are adopted in order for personal use of the PCR system. Maximally 8 DuxCyclers can be operated with 1 personal computer. With DuxCycler S/W, researchers can easily create and edit PCR protocols. Temperatures of lid and chamber well of the DuxCycler are stored in real time. The DuxCycler works with Windows OS, Mac, Android and iOS.



DuxCycler

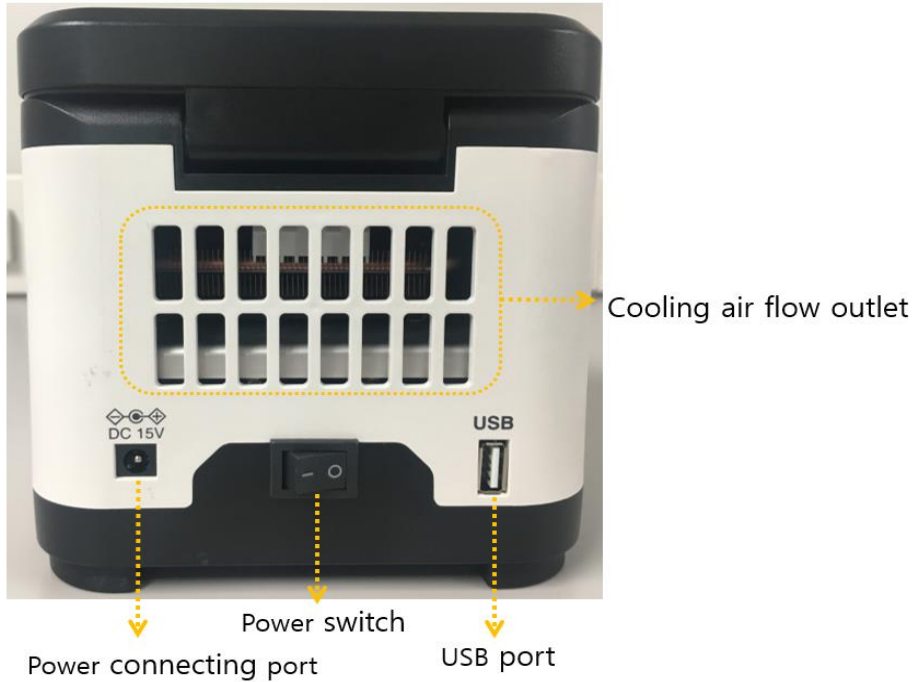
Description of the system

① Front view



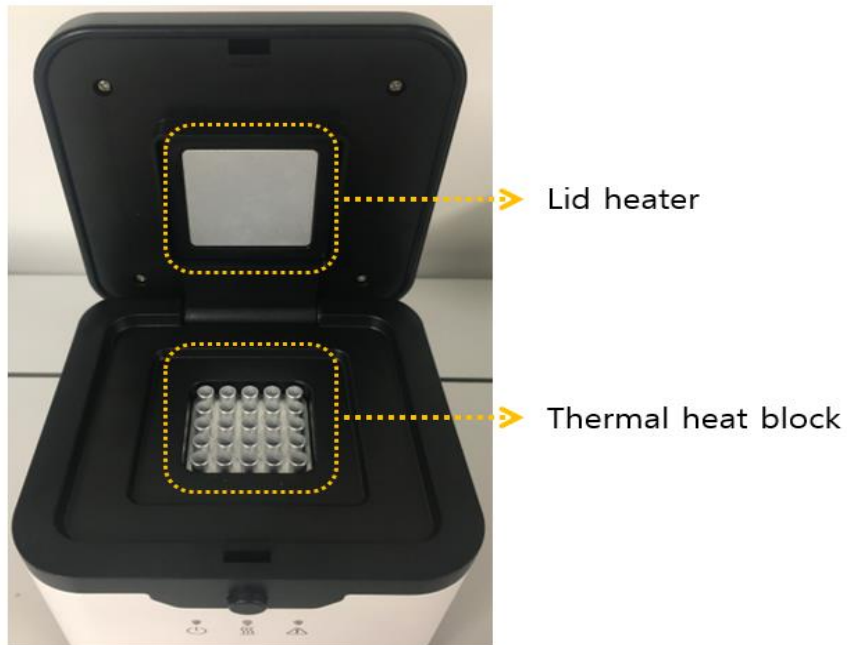
Lid heater part	The lid heater designed at the interior side of the lid to protect against evaporation resulting from heating of the reaction tube. 【Caution】 Avoid inserting fingers as the lid heater (interior) of the unit reaches very high temperature (up to 110°C) in operation.
Open button	This button is used to open the lid.
Indicator LED	Lighting that shows the operating status of the device.

② Rear view



Cooling air flow outlet	Openings used to cool the interior of the unit. 【Caution】 Do not block any of the air vents.
Power connecting port	Socket for power adapter.
Power switch	The power switch is main switch to turn on and off the power.
USB port	A USB port allows for connection the unit to PC.

③ Lid block view



Lid heater	<p>The lid heater protects against evaporation resulting from heating of the reaction tube and reaction plate</p> <p>【Caution】 Avoid inserting fingers as the lid heater of the unit reaches very high temperature (up to 110°C) in operation.</p>
Thermal heat block	<p>Section of the unit in which sample tubes are placed.</p> <p>【Caution】 Do not touch the block as it reaches temperatures up to 99°C.</p>

2. Installation and setup

Site requirements

The DuxCycler is for indoor use.

Ensure that the installation site:

- Meets the spatial and weight requirements. (see "System specifications" on page 17)
- Meets environmental requirements.
- Is within 1 m of an AC power source receptacle.
- Is away from water.

Environmental requirements

Ensure that the installation site is maintained under the following conditions:

- Acceptable condition ranges for
 - ✓ Temperature is 20 to 40°C
 - ✓ Humidity is 20 to 80% relative humidity, noncondensing
- Avoid placing the instrument adjacent to heaters, cooling ducts, or in direct sunlight.
- Place away from any equipment that vibrates, such as a refrigerator or centrifuge.

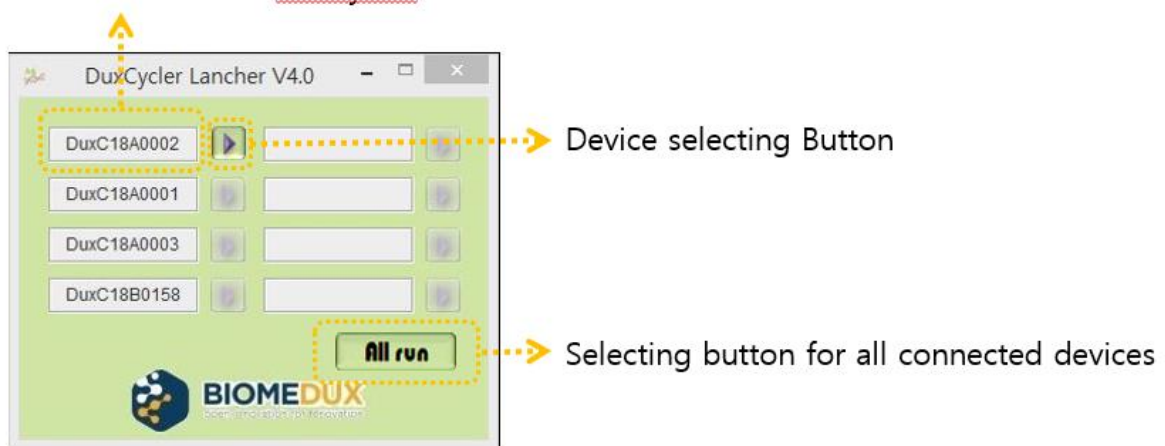
Setting up the system

1. Remove the packing material.
2. Connect the power cable to the **DuxCycler**. (Check the power switch is off state before connection)
3. Connect the USB cable to the computer.
4. Connect the power cable to the AC power source receptacle.
5. Install the **DuxCycler.exe S/W**. (Check the **DuxCycler.exe S/W** Icon on the computer monitor)
6. Turn the power switch of the **DuxCycler** on.
7. Execute the **DuxCycler.exe S/W** by double clicking the DuxCycler.exe S/W Icon. (Check the device connection monitor window is displayed)
8. Check the serial no. of the **DuxCycler** is displayed in the device connection monitor window.



DuxCycler S/W Icon

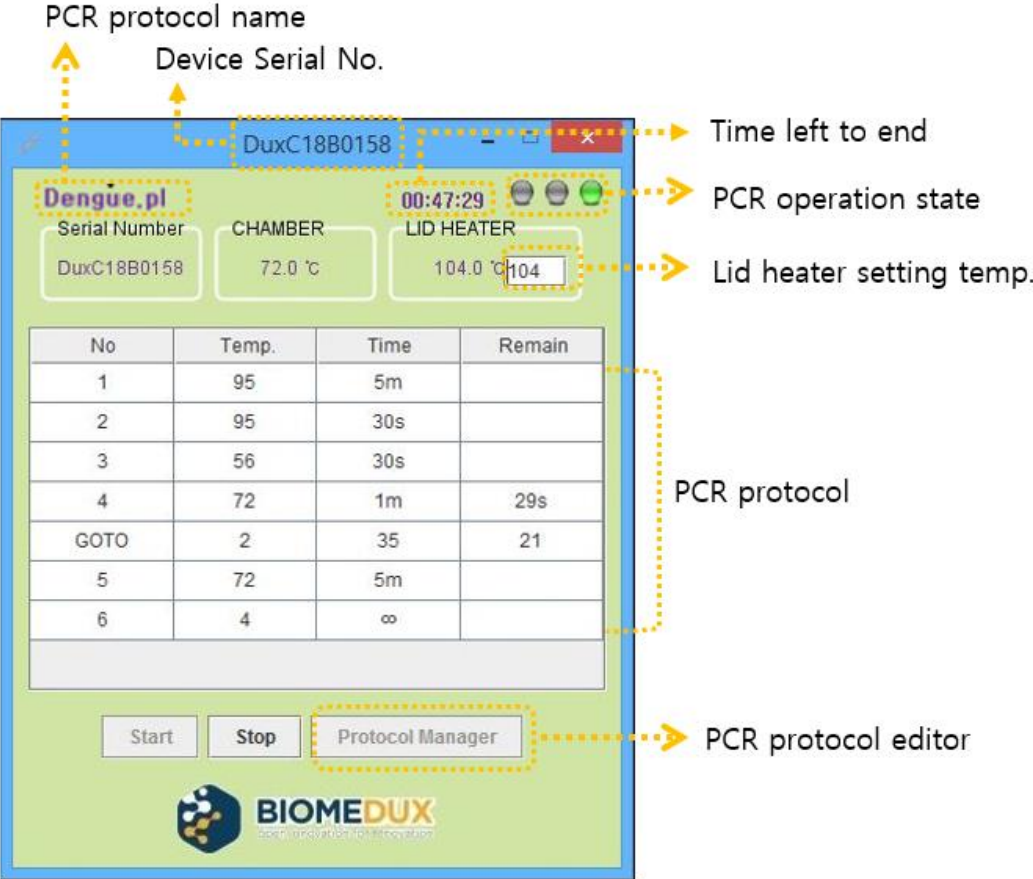
Serial no. of the DuxCycler



Device connection monitor window

3. Operation of the DuxCycler PCUI

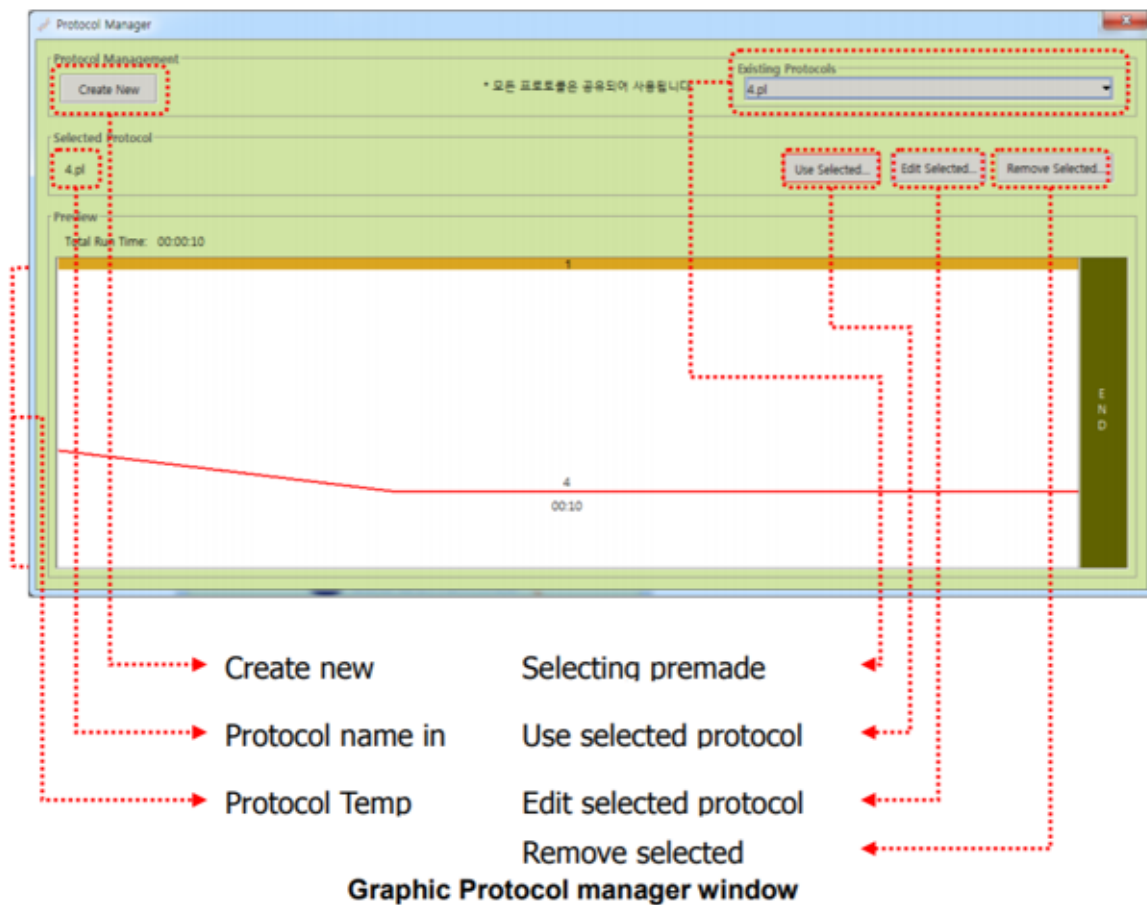
Indications of User Interface



PCR protocol Editing

PCR protocol shall be stored in the file format of *.txt*. You can use the “**Protocol Manager**” to edit/create/cancel the PCR protocol graphically.

1. Click **Protocol Manager** to display the graphic editor. Then the protocol graphic editor will be displayed.



2. Click the **Create New** button.
3. Edit the temperature or hold time by double-clicking the default value in the graphic and entering a new value.

graphic and entering a new value.

- To insert a step, click the **Insert Step** button.

- To delete a step in protocol, select a step in the graphic view and click the **Delete Step** button.

Select the inserting position (after or before) at given temp. step

Given Temp. step

Insert "temp." step

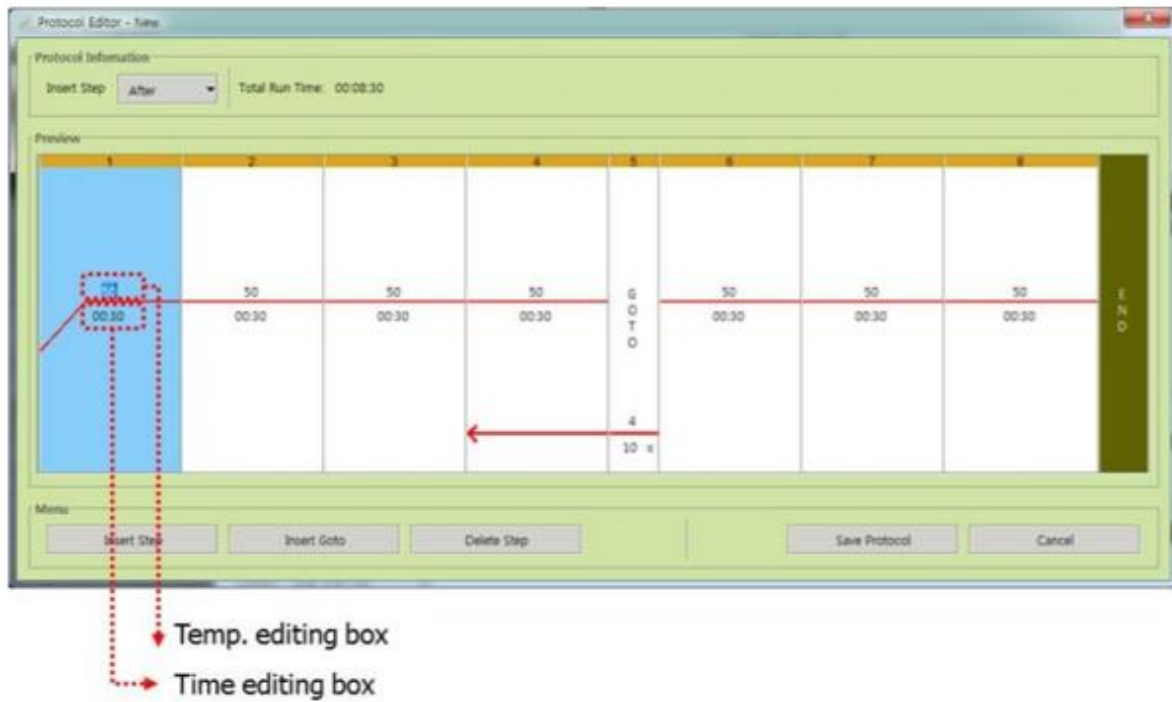
Insert "goto" step

Delete "temp." step

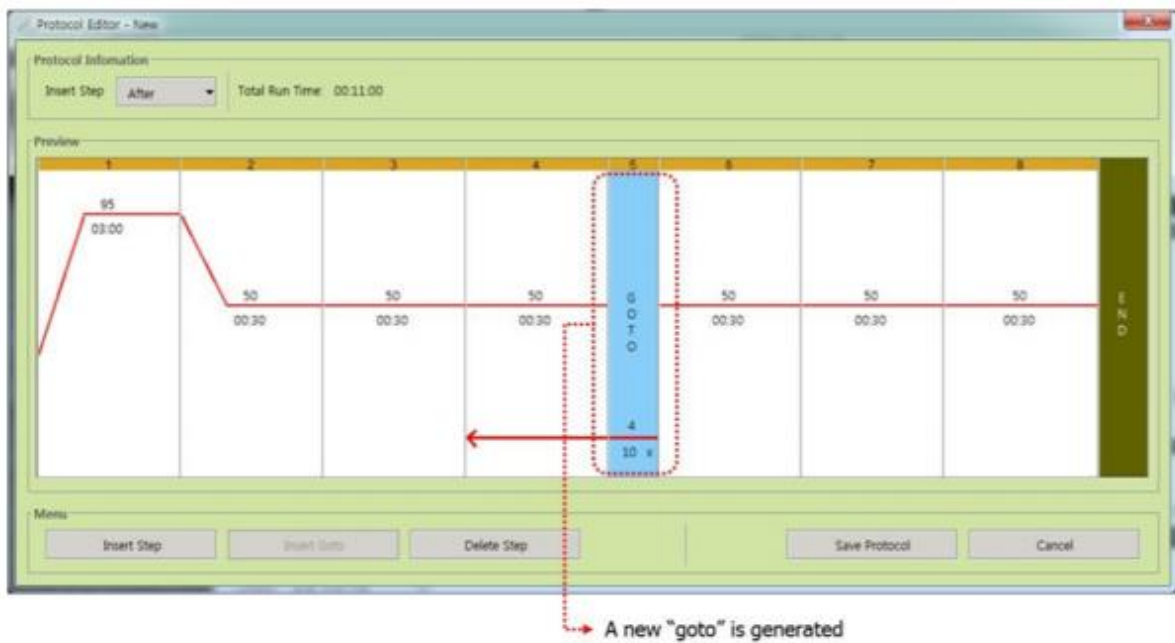
Cancel protocol

Save protocol

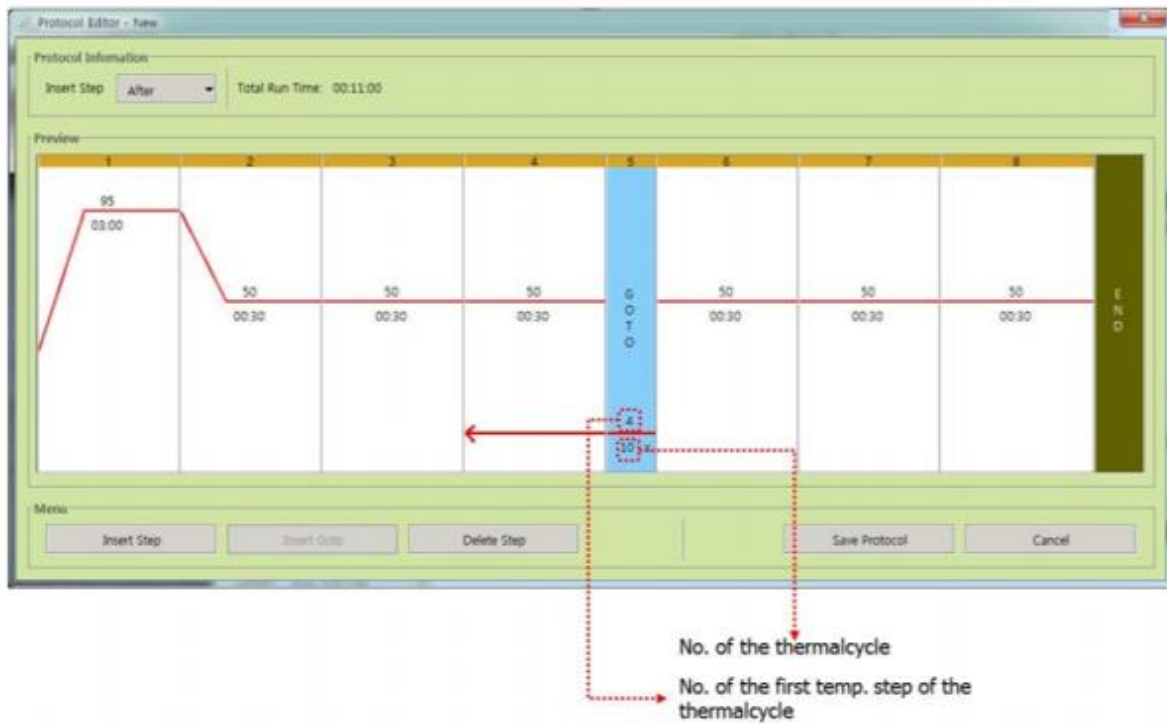
Protocol Editing Window



4. To insert a step before or after the selected step, click the **Insert Goto** button.

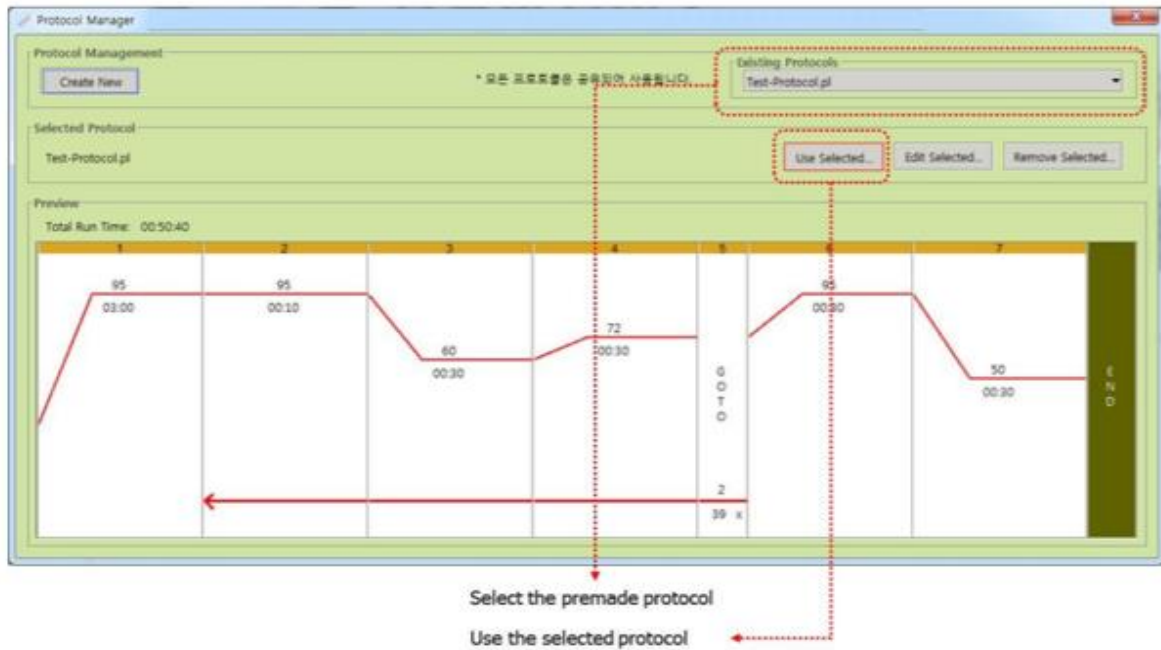


5. Edit the Goto step number and number of Goto repeats by double-clicking the default value in the graphic and entering a new value.

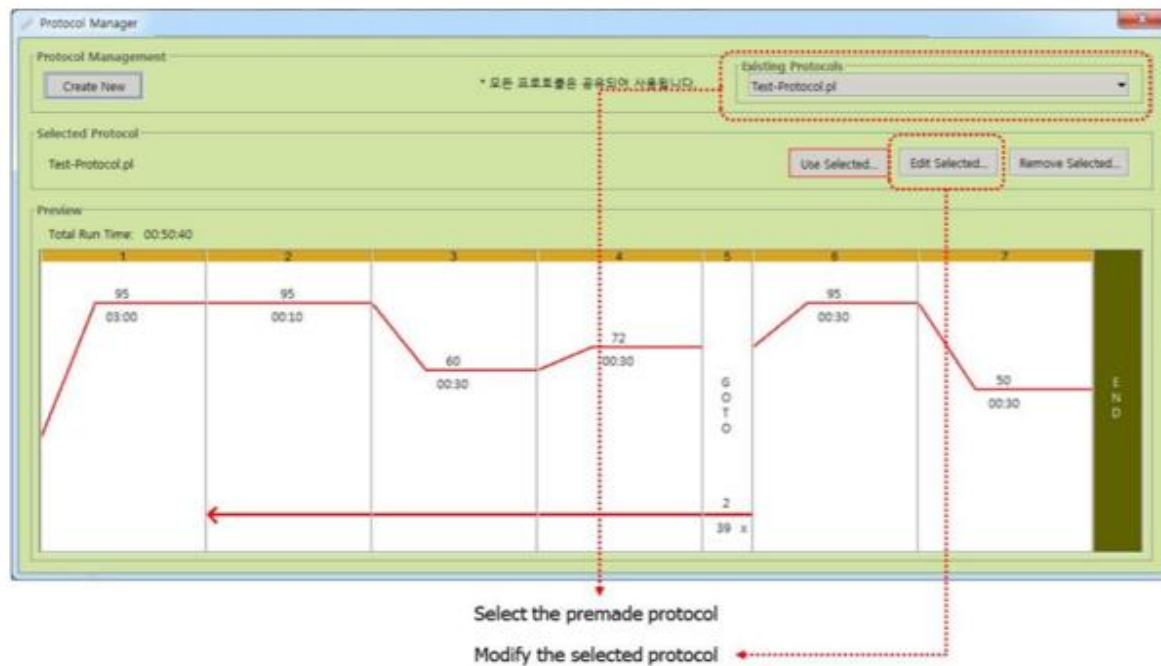


6. After creating a protocol, click the **Save Protocol** button to save it.

7. You can select one of the premade PCR protocols which were saved in the pre-determined folder in the computer hard disk. In order to use the selected PCR protocol, you can click the **Use Selected** button in the second line of the top button.



8. If you want modify the selected/used protocol, you can click the **Edit Selected** button.



4. Trouble shooting

When the device does not power up.

- ✓ The power cable is unplugged.
→ Plug the power cable into the back of the device.
- ✓ The main power is not turned on.
→ Turn the main power switch on.
- ✓ The power supply is not working correctly.
→ Need to replace the power supply.

When the device does not connect to PC.

- ✓ Check the connection status of the USB port.

When the device does not install.

- ✓ Use the other USB port to install.
- ✓ Check the USB port in the current PC using other USB device.
- ✓ Install Java from <https://www.java.com/en/download/> to suit your software requirements.

When the green LED is not on.

- ✓ Check if DuxCycler machine is on.
- ✓ Check the device manager of the windows control panel.
- ✓ Check the properties of the USB HID devices. Then you can find "(DuxCycler PCR System)" at the location description in the property dialog box of one of the USB HID devices. If not, try the other usb ports or them of other computers.

When the blue LED in the DuxCycler machine is blinking, but that of DuxCycler SW is not.

- ✓ Exit the DuxCycler SW and launch it again.
- ✓ If not solved, please get the newest version from our web site.

If the problems is continues or if there is a new problem, contact the nearest sales agent or the Biomedux Co., Ltd. Technical support line.(+82-31-899-8620)

5. System specifications

	DuxCycler
Dimension (mm)	150mm x 150mm x 150mm
Weight (kg)	2.5kg
Sample capacity/Size	25 well / 0.2ml tube
Input Voltage	110~220 volt / 60Hz
Method of heating	Peltier
Method of cooling	Peltier/ air cooling
Temperature Accuracy	± 0.2°C
Temperature Uniformity	± 0.2°C
Lid Temperature	25~110°C
Operating Temperature	20~40°C
Operating Humidity	20~80%
Operating System	Windows OS, Mac, Android, iOS

6. Requirements for the device storage

Storage conditions are :

Temperature: 0~40°C

Humidity: 20~80%

Transporting temperature: 0~50°C

Transporting humidity: 10~70%