Microbiologique

Microcycler™

8-Well Thermal Cycler

User Manual

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Introduction

This manual describes the operating instructions for the Microcycler™. It includes installation, operation, and maintenance.

Description

The Microcycler™ offers a cost-effective solution for polymerase chain reaction (PCR)-based assays commonly used to amplify specific target DNA sequences. The lightweight and portable design of this thermal cycler makes it practical for use in a laboratory setting or on-site testing.

The instrument consists of an 8-well heat plate and heat lid with temperatures programmable between 30°C and 105°C with ± 0.2°C precision. The resistive heating and air-forced cooling systems are controlled by a PID algorithm for accurate and precise thermal cycling of the heat plate. To ensure optimal performance, every Microcycler™ unit is pre-calibrated and tested prior to release .

This portable Microcycler™ is a stand-alone instrument and may also be connected to a computer via WiFi and HDMI cable. The Microcycler™ is compatible with any laptop, desktop, and Android / IOS phone. Multiple units of Microcycler™ may be operated simultaneously on one display using SSH via wireless or ethernet connection.
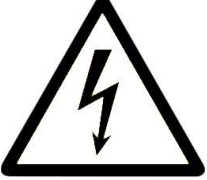
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Safety and Regulatory Compliance

Safety warning labels

Warning symbols are affixed on the instrument and listed in this manual to inform the User of potential sources of harm. The warning labels are listed below:

Symbol	Meaning
	CAUTION: Risk of danger!
	CAUTION: Risk of electrical shock!
	CAUTION: Hot surface! This symbol identifies components that pose a risk of personal injury due to excessive heat if improperly handled.

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Set up

- The Microcycler^{TM} package includes one Microcycler^{TM} (Figure 1), one power supply (19V, 4.7A), and a User manual. **Note: Monitor, mouse, HDMI cable, PCR kits and other materials are not included with the Microcycler^{TM}.**
- Remove all packaging materials and place the Microcycler^{TM} on a flat, dry surface with sufficient cool airflow to run properly.
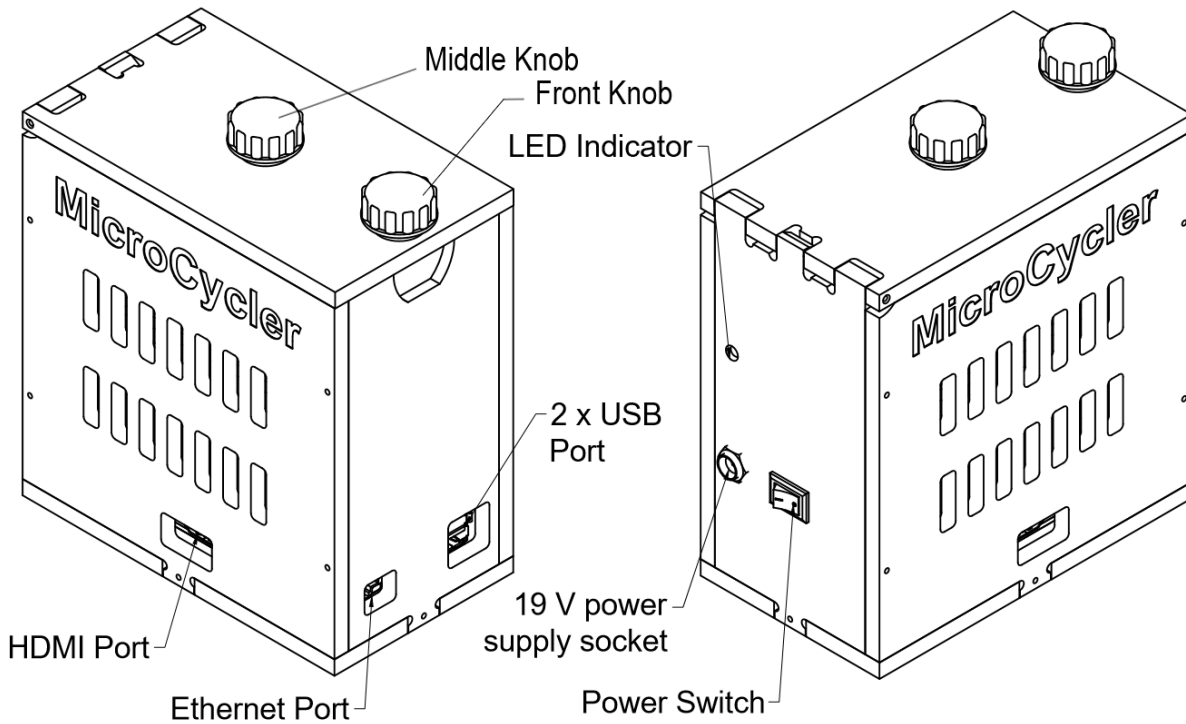
Figure 1. Microcycler^{TM} external parts
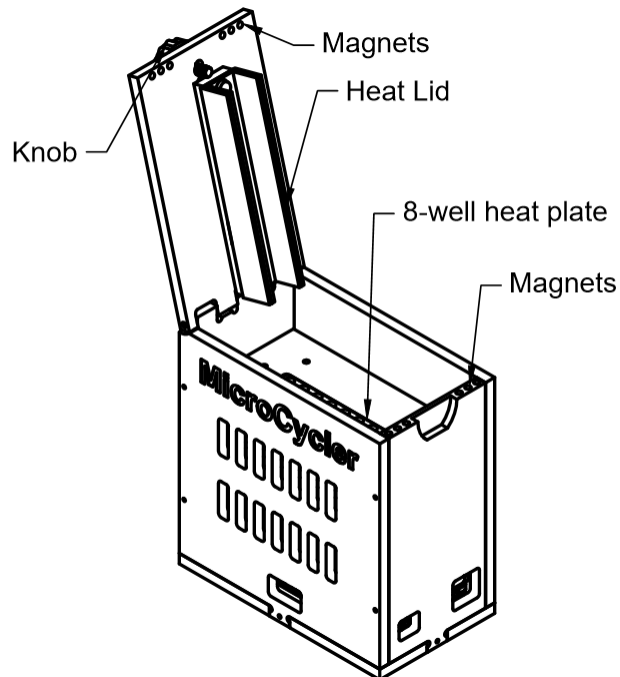
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Figure 2. Microcycler™ internal parts

- The Microcycler™ can be operated wirelessly or with an HDMI cable.
    - For WiFi connection, use Remote Desktop Connection.
    - For HDMI connection, insert an HDMI cable into the HDMI port and the mouse and keyboard into the USB ports of the Microcycler™. Connect the power supply to an electrical outlet. **Note: Insert the HDMI cable before turning on the power supply!**

- After selecting the type of connection, turn on the power supply located at the back of the Microcycler™. The Microcycler™'s desktop screen will appear. In case the Microcycler™ does not automatically log in or a user logs out, use the following username and password to log back in:
    - Username: PCR
    - Password: ieh

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Operation

- Select the **Microcycler^{TM}** icon (located on the top left corner of the desktop) to access the program menu as shown below:
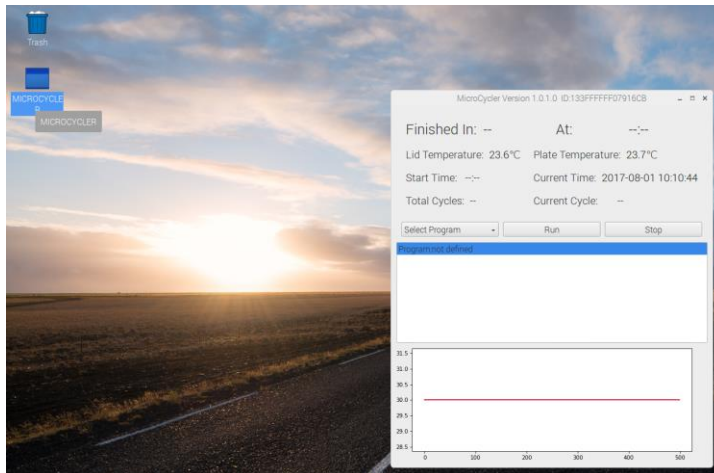

Figure 3. Start Microcycler^{TM} program

- Open the Microcycler^{TM} by unscrewing the front knob in counterclockwise direction and gently lift the lid until it locks to the back plate at ~ 105° angle.
- Place the 8-tube test strip into the wells, and gently push the strip/tubes down to ensure that the strip/tubes firmly come into contact with the heat plate.
- Close the lid until the magnets. If the lid does not close properly, do not force it closed. Rotate the middle knob counterclockwise to raise the knob up.
- Lock the lid by rotating the front knob in clockwise direction.
- Adjust the middle knob until the knob comes into contact with the heat lid.
- To select the desired cycle, click "**Select Program**" and choose the desired program.
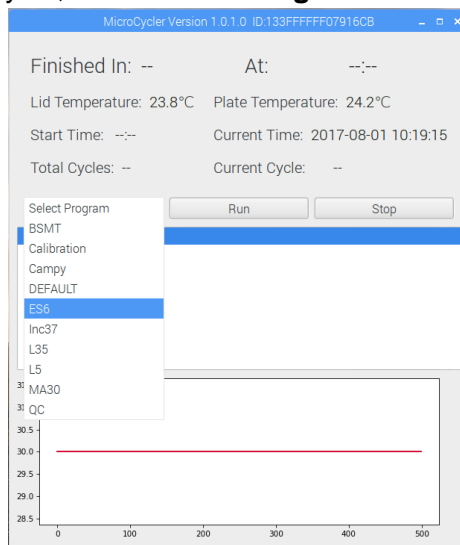

Figure 4. Program selections

- Click "**Run"** to start running the selected program.
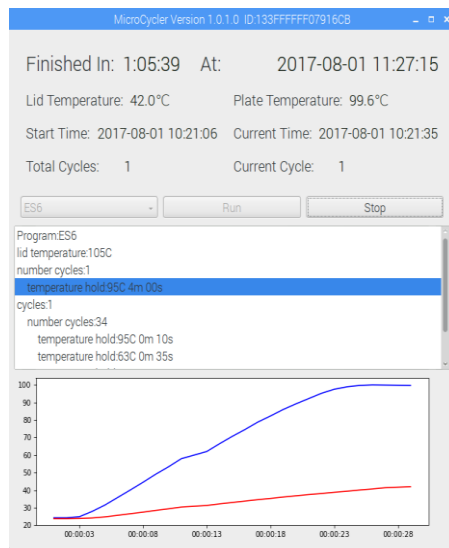
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Figure 5. Program running

- PCR is completed when current cycle reports "**Complete"**.
- The program can be aborted by selecting "**Stop**".
- To re-run the program, select "**Run**".
- Open the lid of the Microcycler™ and carefully remove the strip/tubes. The thermal-cycling is complete, and the contents of the tubes can be further analyzed by electrophoresis or dipstick testing.
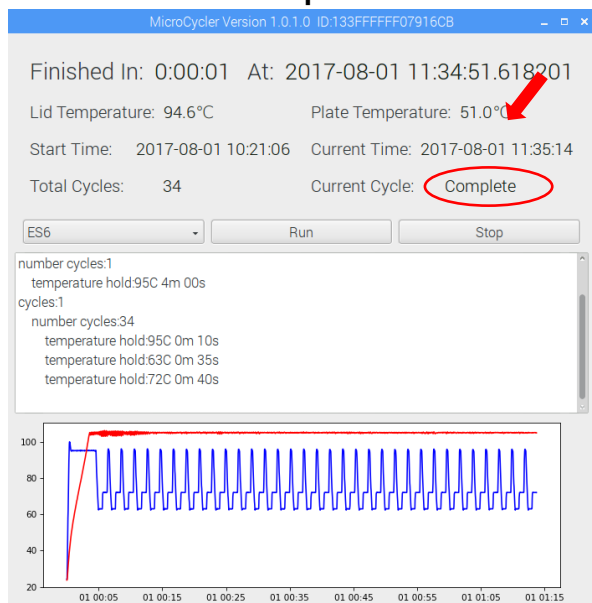 **Note: Do not open the lid if the Microcycler™ is running a program.**
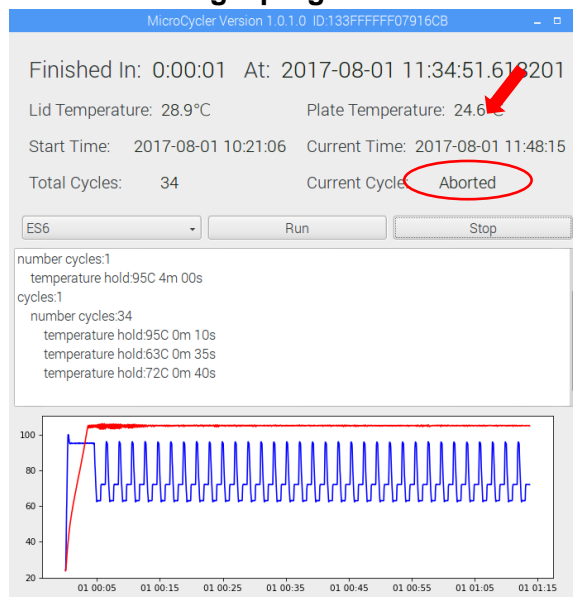

Figure 6. Program completed

Figure 7. Program aborted

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Edit Program

-To edit or create new programs, go to the programs folder located at "home/PCR.programs".

-To edit a program or create a new program, right click on the program to be edited and select "**SciTE Text Editor"**.
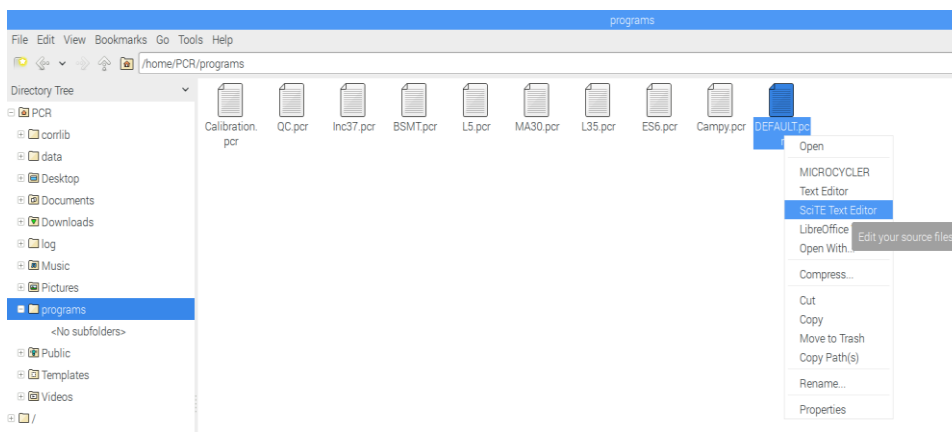

Figure 8. Editing a pre-existing program

- Follow the existing program format to modify only the temperature, time, and cycles.
- If you wish to add more steps in a cycle, follow the format and add the line "temperature hold **XX**C **YY**s" where **XX** is temperature in °C and **YY** is number of seconds.
  Note: Modification of the program format will result in the Microcycler™ program not functioning. *For assistance, please call Microbiologique Inc.*
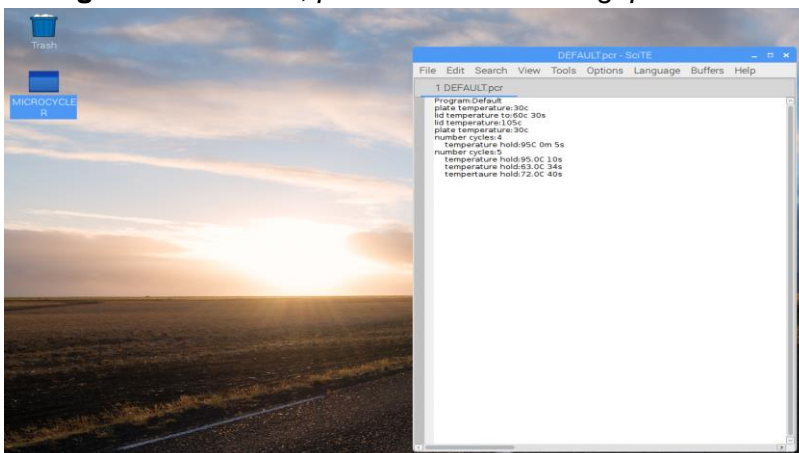
Figure 9. Modification of a pre-existing program

- Go to **File,** click on "**Save As**" and type the new program's name. Click on "**Save**"**.**
  - Re-select the program in the **Select Program** tab of the Microcycler™ program to load the customized program.

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Data Log

- The Microcycler^{TM} monitors the temperature in the wells and creates a temperature data log file for each run. To access, open the data log records, then open the "data" folder located at "PCR/data".

Figure 10. Data log record

- Right click on the log file and select "**SciTE Text Editor"**. This will open the temperature records for the run.
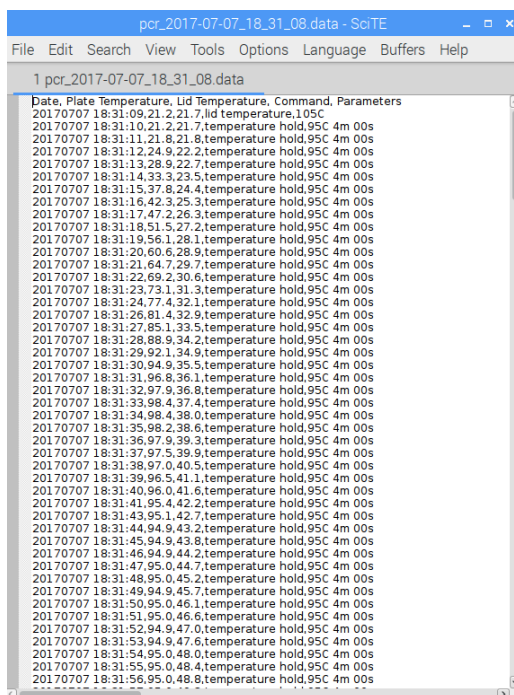
Figure 11. Example of records of temperature

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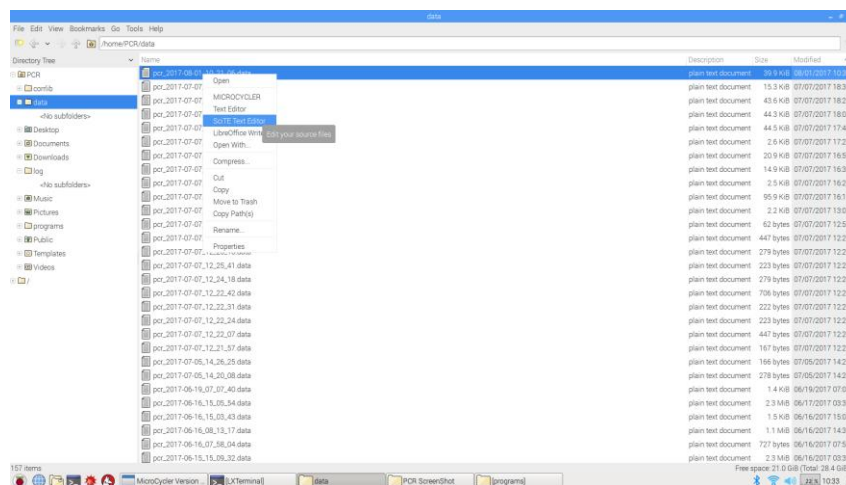
LED Message

Color	Meaning
Blue	Program running
Green	Cold
Red	Hot
Yellow	Error
Blinking Red & Blue	PCR is running, hence the plate is hot.
Blinking Blue & Green	Plate is cool & program is ready to run.
Blinking Blue & Yellow	Error occurred while running the PCR.
Blinking Green & Red	In the process of cooling but still hot.

Troubleshooting

If an error occurs while running the Microcycler™, e.g. temperature spike or display abnormality, etc., please contact customer support (page 12) for further information.

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Product Specifications

Model	Microcycler™ 8-well
Dimensions (W x D x H)	74 mm x 130 mm x 137 mm
Weight	680 g
Supply Voltage	19V
Supply Current	4.7A
Rated Load	80W
Reaction Volumes	10-50 µL
Runtime	≤ 40 min for 3-step 40-cycle PCR
Sample Format	8-well plates, 8-tube strips
Thermal Cycling System	Resistive Heating, Forced-Air Cooling
Programmable Plate Temperature range	30-105 °C
Programmable Lid Temperature range	30-105 °C
Temperature Accuracy	± 0.2 °C of programmed target temperature
Maximum Ramp Rate Heating	3.75 °C/s
Maximum Ramp Rate Cooling	1.40 °C/s
Temperature Uniformity	Range (max-min) ± 0.5 °C
Networking	10/100 Ethernet, 2.4 GHz 802.11n wireless
Bluetooth	Bluetooth 4.1 Classic, Bluetooth Low Energy
Internal Storage	2 GB
Port	HDMI, 2x USB, Ethernet, 5.5 mm power socket
Operating Conditions	15-35 °C, protect from moisture
Storage Conditions	15-35 °C, protect from moisture

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Customer support

For technical support and orders, please contact:

Microbiologique, Inc.

Telephone: (206) 525 0412

Technical Support: tech@microbiologique.com

Orders: orders@microbiologique.com

Disclaimer

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