Microcycler™

8-Well Thermal Cycler

User Manual
Microcycler™
User Manual

Table of Contents

Table of Contents..........................................................................................................................1
Introduction..........................................................................................................................................2
Description........................................................................................................................................2
Safety and Regulatory Compliance .................................................................................................3
  Safety warning labels ....................................................................................................................3
Set up ..............................................................................................................................................4
Operation ........................................................................................................................................6
Edit Program ....................................................................................................................................8
Data Log ..........................................................................................................................................9
LED Message ...................................................................................................................................10
Troubleshooting ...........................................................................................................................10
Product Specifications ....................................................................................................................11
Customer support .........................................................................................................................12
Disclaimer ......................................................................................................................................12

1
Microcycler™
User Manual

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.
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:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Symbol" /></td>
<td>CAUTION: Risk of danger!</td>
</tr>
<tr>
<td><img src="image2.png" alt="Symbol" /></td>
<td>CAUTION: Risk of electrical shock!</td>
</tr>
<tr>
<td><img src="image3.png" alt="Symbol" /></td>
<td>CAUTION: Hot surface! This symbol identifies components that pose a risk of personal injury due to excessive heat if improperly handled.</td>
</tr>
</tbody>
</table>
**Microcycler™ User Manual**

**Set up**

- The Microcycler™ package includes one Microcycler™ (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™.**
- Remove all packaging materials and place the Microcycler™ on a flat, dry surface with sufficient cool airflow to run properly.

---

**Figure 1. Microcycler™ external parts**

- **Middle Knob**
- **Front Knob**
- **LED Indicator**
- **HDMI Port**
- **Ethernet Port**
- **2 x USB Port**
- **19 V power supply socket**
- **Power Switch**
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
Operation

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

![Figure 3. Start Microcycler™ program](image)

- Open the Microcycler™ 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](image)

- Click "Run" to start running the selected program.
- 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.
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 XXC YYs” 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.
Data Log

- The Microcycler™ 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
LED Message

<table>
<thead>
<tr>
<th>Color</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>Program running</td>
</tr>
<tr>
<td>Green</td>
<td>Cold</td>
</tr>
<tr>
<td>Red</td>
<td>Hot</td>
</tr>
<tr>
<td>Yellow</td>
<td>Error</td>
</tr>
<tr>
<td>Blinking Red &amp; Blue</td>
<td>PCR is running, hence the plate is hot.</td>
</tr>
<tr>
<td>Blinking Blue &amp; Green</td>
<td>Plate is cool &amp; program is ready to run.</td>
</tr>
<tr>
<td>Blinking Blue &amp; Yellow</td>
<td>Error occurred while running the PCR.</td>
</tr>
<tr>
<td>Blinking Green &amp; Red</td>
<td>In the process of cooling but still hot.</td>
</tr>
</tbody>
</table>

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.
## Microcycler™ User Manual

### Product Specifications

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

Warranty Disclaimer. Microbiologique, Inc. (“Microbio”), makes no warranties on its Microcycler™ device(s), whether express or implied, including not limited to the implied warranties of merchantability and fitness for a particular purpose. Microbio does not warrant against damages or defects arising out of the use of the Microcycler™ device(s); against defects or damages arising from improper use; or against defects in the Microcycler™ device(s) or its components. No warranty of any kind, expressed or implied, is made regarding the safety of the Microcycler™ device(s). The entire risk as to the quality performance of the Microcycler™ device(s) is with the purchaser.

Limitation of Liability and Indemnification. Microbio disclaims liability of potential injury or other damage that may result from use of the supplied Microcycler™ device(s). Purchaser shall indemnify and hold harmless Microbio and its directors, officers, employees, agents, stockholders, affiliates, contractors, subcontractors and employees from and against all allegations, claims, actions, suits, demands, damages, liabilities, obligations, losses, settlements, judgements, costs and expenses (including without limitation attorney’s fees and costs) which arise out of, relate to or result from the use of the supplied Microcycler™ device(s). Purchaser's sole remedy for defective Microcycler™ device(s) is replacement. In no event shall Microbio be liable for any direct, indirect, punitive, incidental, special consequential damages of any nature whatsoever or expenses arising out of or connected with the misuse of the Microcycler™ device(s)

Manufactured by Microbiologique, Inc
8315 Lake City Way NE
Seattle, WA 98115
USA