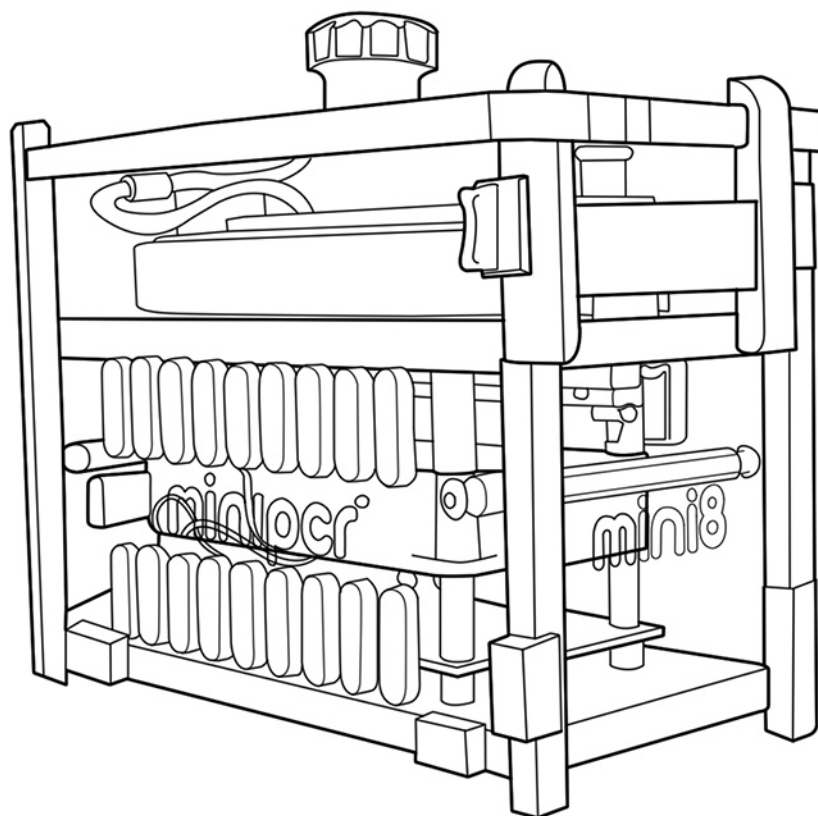


miniPCR™ mini8 Thermal Cycler

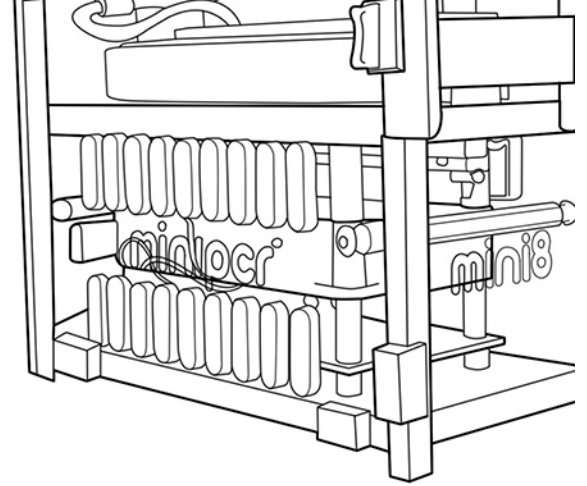
User's Guide



miniPCR®

Personal, portable thermal cycler
PCR for everyone, everywhere

WARRANTY



This Limited Warranty covers defects in materials and workmanship for a period of 12 months from the date of purchase under the following conditions:

- This 12-month warranty is valid from the date of purchase of miniPCR thermal cyclers (the "Product").
- This Limited Warranty covers the original purchaser of the Product and shall not extend in its validity to third parties without the written agreement of Amplyus LLC ("Amplyus").
- This Limited Warranty covers only the Product and any original accessories provided with it. It excludes software, documentation, consumables, or related items.
- This Limited Warranty will maintain its validity only as long as the Product is operated in the manner, conditions, and with the care described in its User's Guide or Manual.
- This Limited Warranty will be voided by improper or unauthorized maintenance of the Product, or by improper attachment of electrical adapters and power supplies not supplied by Amplyus or its authorized representatives.
- This Limited Warranty will be voided by any failure to meet requirements for the operation of a thermal cycler in laboratory conditions as described in the User's Guide.

Amplyus will repair or replace any defective items upon factory inspection of the item claimed. Amplyus will cover shipping charges if the claim is initiated within 30 days from purchase. After 30 days from the date of purchase, end users of the Product will be responsible for shipping charges to and from the Amplyus facility for assessment and repair under the terms of this Limited Warranty.

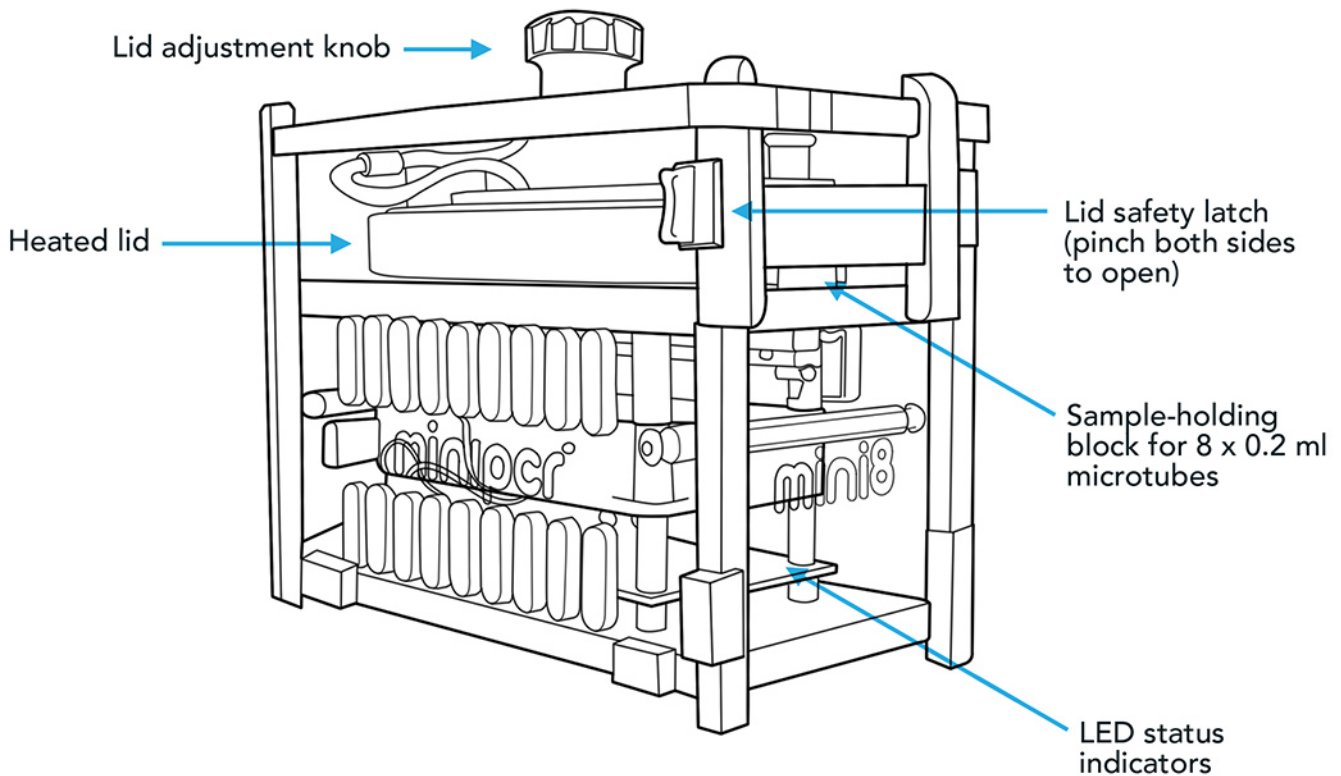
This Limited Warranty does not cover wear and tear to components resulting from normal use of the Product, nor does it cover failures caused by incorrect use, negligence, alterations, or damage caused by intentional or accidental misuse of equipment. This Limited Warranty also excludes damage caused during any shipment/transport/movement of the product following its initial receipt by the customer.

Amplyus' sole liability, under this Limited Warranty, for failure to repair or replace miniPCR thermal cyclers after a reasonable number of attempts, is limited to the replacement of the Product or, at Amplyus' sole discretion, the refund of the original purchase price of the Product.

FEATURES

- ✓ Use as thermal cycler or heat block
- ✓ 8 x 0.2 ml PCR tube capacity (strip-compatible)
- ✓ Heated lid
- ✓ Portable and durable construction
- ✓ On-device microprocessor runs autonomously
- ✓ Program via Windows, Mac, Chromebook or Android app
- ✓ Programming flexibility, unlimited programs
- ✓ Universal voltage power adaptor 100-240V
- ✓ Battery/solar power operation for full autonomy (optional)

COMPONENTS





SYSTEM INCLUDES

- ✓ miniPCR™ mini8 thermal cycler
- ✓ 6 ft USB Cable (reorder item no.: QP-1000-09)
- ✓ Universal voltage power adapter (reorder item no.: QP-1000-03)
- ✓ Drawstring travel pouch (reorder item no.: QP-1000-12)
- ✓ US-style AC cord (reorder item no.: QP-1000-07)

OPTIONAL ACCESSORIES (not included)

- ✓ USB OTG adapter for Android devices (item no. QP-1000-06)
- ✓ Portable solar panel (contact team@minipcr.com)
- ✓ Portable battery pack (contact team@minipcr.com)



DIRECTIONS FOR USE

Getting started

- Software downloads 6
- Loading your miniPCR 7

Operation via miniPCR™ software and Apps

- Windows or Mac 8
- Android smartphone or tablet 13

Operation without external devices

- LED interface guide 16

Troubleshooting and maintenance 17

GETTING STARTED

Download the miniPCR™ App (free download)


1. Visit www.minipcr.com/downloads and select your platform of choice (Windows, Mac, Android, or Chrome operating systems).

Android users: follow the link to the Google Play Store.

Computer users: unzip the file and run the miniPCR installer.

Mac OS users: If the operating system will not let you open the software ("miniPCR" can't be opened because it was not downloaded from the Mac App Store.), you will need to change your permission settings in

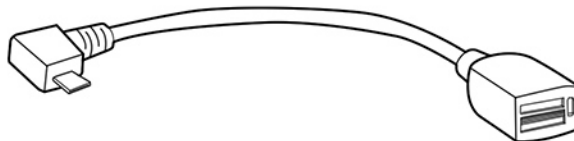
System Preferences → Security & Privacy → Allow apps downloaded from: → Select: "Anywhere"

2. Open the App by double-clicking or tapping on the miniPCR icon 
3. Connect one terminal of the USB cable to your miniPCR thermal cycler.

Computer users: connect the other USB terminal to your computer

Android users: first connect the OTG male into your Android device (smartphone or tablet); and only then connect the miniPCR USB cable into OTG adapter (female).

1st. Connect OTG male to Android device



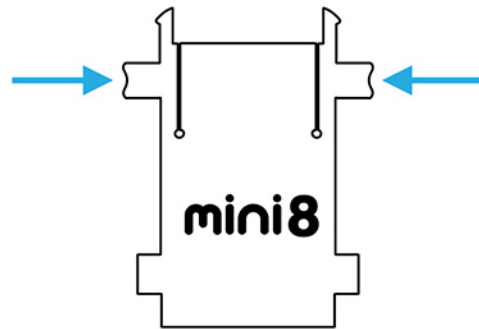
2nd. Connect OTG female to miniPCR USB cable

4. The three LEDs on your miniPCR™ machine will blink several times.

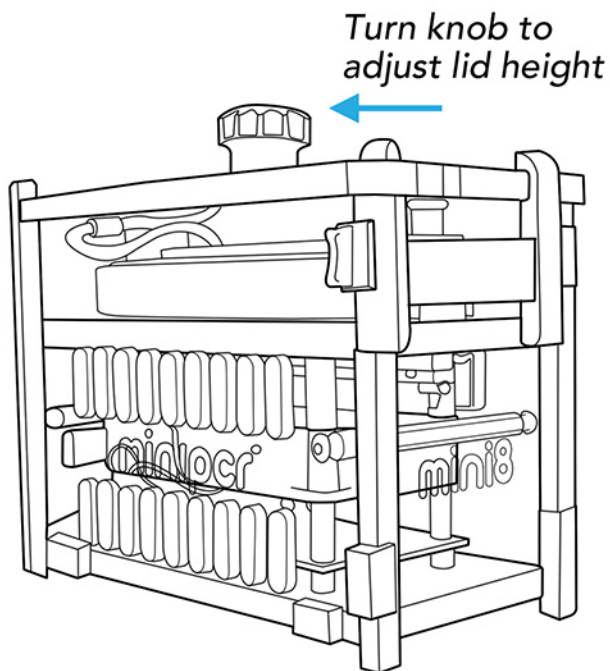
You are ready to use your miniPCR™ thermal cycler.

LOAD YOUR SAMPLES

1. **Open the lid** by pinching the side tabs on the front plate of your miniPCR™ machine (indicated by arrows). Use your thumb and index fingers to pinch, and lift the lid with your other hand. Load the PCR tubes in the metal block.



*Pinch both tabs
to release lid*



*Turn knob to
adjust lid height*

2. **Adjust the height** of the heated lid. Fully untwist (counterclockwise) the adjustment knob and press the lid down until the lid clicks shut. Tighten the adjustment knob (clockwise) until you feel light resistance from the tube caps. Be careful not to over-tighten.

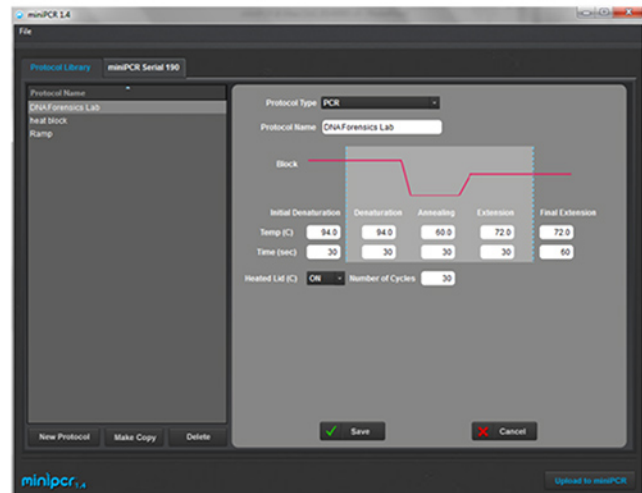
Operation via **Windows** and **Mac** computers

Creating, storing, and editing protocols

Create and Save a New Protocol

1. Open the miniPCR™ App in your computer and remain on the "**Protocol Library**" tab

2. Click on the "**New Protocol**" button on the lower left corner.



3. Select the "**Protocol Type**" from the drop-down menu on the top of the right pane

- **PCR:** for thermal cycling reactions
- **Heat Block:** for incubations
- **Linear Ramp:** for heating or cooling reactions at a steady rate

4. Enter a Protocol Name; for example "**GeneX PCR**"

5. Define protocol parameters:

- **PCR:** Step temperatures and durations, number of cycles
- **Heat Block:** Incubation temperature, duration
- **Linear Ramp:** Start and Final temperatures, duration

6. Click "**Save**" to store your new protocol

- Your protocol is now ready to use and available in the Protocol Library
- *Tip: clicking "Upload to miniPCR" will automatically save and run the protocol*

Operation via **Windows** and **Mac** computers

Creating, storing, and editing protocols (cont)

Edit an Existing Protocol

1. Click on the desired protocol from your Protocol Library
2. Update **protocol parameters** (e.g. change the number of cycles)
3. Click "**Save**" to store the updated protocol parameters
4. You can also modify an existing protocol by clicking "**Make Copy**". A new protocol will be created ("Protocol Name(copy)"). Edit as desired, then click "**Save**" to store the modified protocol. The original protocol will be preserved.

Running and monitoring protocols

Run a New or Existing Protocol

Tip: the USB connection is sufficient to program; external power is not needed at this step.

1. Connect your **miniPCR™ thermal cycler via USB cable.**

Tip: You can simultaneously monitor multiple miniPCR machines with one computer. Each miniPCR™ will appear as a separate tab in the App.

Tip: Have miniPCR power switch in the OFF position

Operation via **Windows** and **Mac** computers

Running and monitoring protocols (cont)

Run a New or Existing Protocol

2. **Select the desired protocol** from your Protocol Library. Click the **"Upload to miniPCR"** button (lower right corner of the App window)

- A dialog box will appear: select the desired miniPCR™, then click "OK"
- LEDs will flash several times to signal a successful protocol upload



3. **Connect miniPCR to its external power adapter** and turn the **power switch ON. Run will begin.** The Green LED signals initialization, followed by the Red LED (heating)

- You may now unplug the USB cable; miniPCR will keep running

Tip: run will begin automatically if you upload a protocol while the power switch is ON

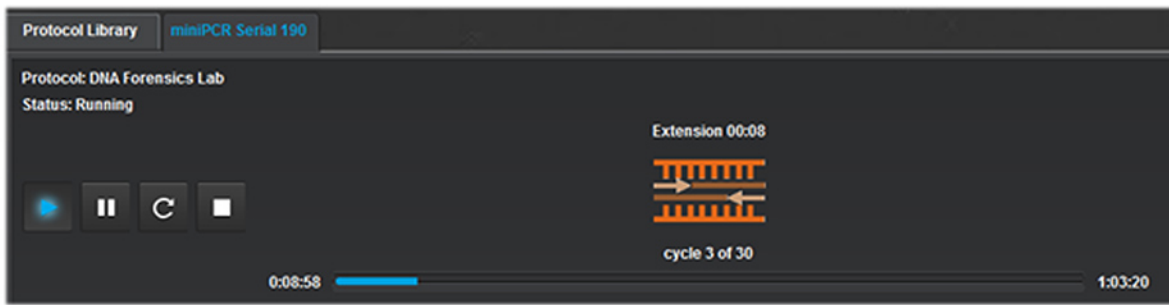
To Monitor the Run

1. Click on "[miniPCR name]" tab to monitor run status:

- Protocol name
- Status: Running, Stopped, Paused, Complete, etc.
- Current step, cycle, and time in step
- Elapsed time (left), remaining time (right)
- You can Pause  or Stop  your reaction at any time

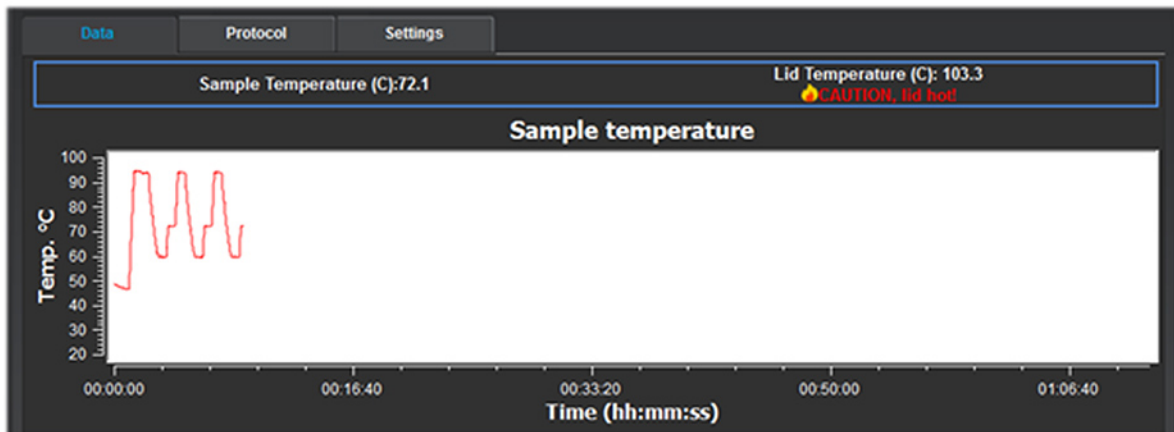
Operation via Windows and Mac computers

To Monitor the Run



2. The Data tab displays reaction parameters in real time

- Lid temperature: current value
- Block temperature: current value and plot over time
- Protocol tab: programmed temperatures and times
- Settings: device information and firmware version



3. If needed, use the "Restart"  button to restart a run.

4. When a protocol is complete, all LEDs will turn and remain ON.

Operation via **Windows** and **Mac** computers

Importing and exporting data

To Save Your Run Data

(Note: data collection is only active during USB connection)

1. Click on **File** ➡ **Save Data**
2. A dialogue box will appear; select the desired miniPCR™, then click "OK"
3. **Save the data file** in your miniPCR folder, or select a new folder

Data will be saved as a comma-separated values (.csv file)
compatible with Excel or other spreadsheets

To Export and Import Protocol Libraries

1. Click on **File** ➡ **Export Program Library**
2. Save the Protocol Library file in your miniPCR folder, or select a new folder
3. All your protocols will be saved in a single .plf extension file
3. To import a Library File, click on **File** ➡ **Import**
4. Browse to the desired **Library file** and select it
5. **Click "Open" to import the file**

All protocols in the selected library will be added to your existing library. You will be prompted to rename any duplicate protocols.

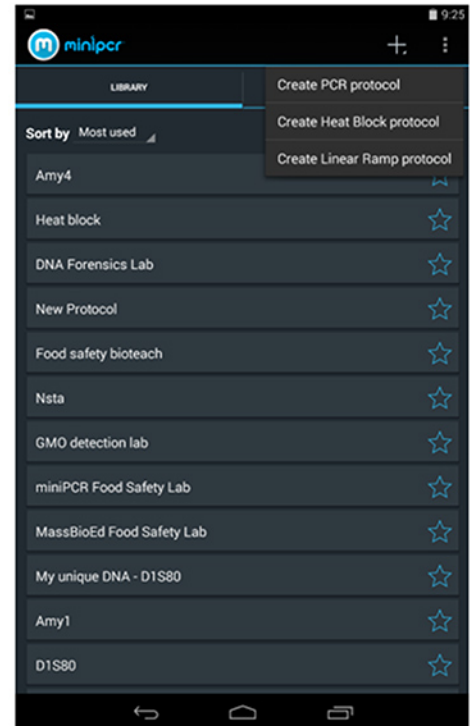
Tip: Your miniPCR folder comes pre-loaded with an "Examples.plf" library ready to import

Operation via **Android smartphones or tablets**

Available for Android phones and tablets with USB host capabilities (please check your device specifications). Requires USB On-The-Go (OTG) adapter (available at www.minipcr.com).

To Create and Run a Protocol

1. Open miniPCR™ App in your Android device. Remain on the LIBRARY tab.
2. Tap the "+" sign on the top right corner and select the protocol type from the menu
 - PCR
 - Heat Block
 - Linear Ramp
3. Enter a Protocol Name and define protocol parameters: temperatures, times and number of cycles
4. Tap "Save only" to store the protocol, or "Save and Run" to store and upload the protocol to miniPCR™ (while on a USB connection)
5. Connect miniPCR to its power adapter and turn the power switch ON. Run will begin. The Green LED signals initialization, followed by the Red LED (heating)
6. You may now unplug the USB cable; miniPCR will keep running



Tip: run will begin automatically if you upload a protocol while the power switch is ON.

Operation via **Android smartphones or tablets**

To Monitor the Run

- Tap the MONITOR tab which will display
 - Protocol name
 - Elapsed time, remaining time
 - Status: Running, Stopped, Paused, Complete, etc.
 - Control buttons: Run, Pause, Restart, Stop
 - Current step, cycle, temperature, and time in step

- The app plots reaction parameters in real time (x = time, y = temperature)

- Tap **View more** to visualize a plot of the expected number of DNA copies per cycle and an animation representing the state of DNA molecules at every step.

- Tap **View protocol** to see programmed parameters (temperatures and times)

- You can disconnect your Android device during the run and the run will continue. To reconnect your Android device, always follow the sequence (i) OTG male to Android device, (ii) USB cable to OTG female. Doing this will reset the temperature plot.



To Export and Import Protocol Libraries

1. Tap on top "⋮" sign ➡ Export Library

2. Save the Protocol Library file in your miniPCR folder, or select a new folder

- All your protocols will be saved in a single .plf extension file

Operation via **Android smartphones or tablets**

To Export and Import Protocol Libraries (cont)

3. You can also import a library file (.plf extension). Tap Import Library and select file

- All protocols in the selected library will be added to your existing library
- You will be prompted to rename any duplicate protocols

4. Libraries can be shared across Window, Mac, Chrome, and Android Apps

Operation without **External Devices**

You do not need to be connected via USB to a computer, smartphone, or tablet to run miniPCR. Your last protocol will begin automatically each time you switch the miniPCR power ON.

To Re-Run Your Last Protocol

- From power OFF position: Connect to AC power, turn the power switch ON. Your last protocol will automatically begin
- From power ON position: Cycle the power switch OFF, then ON. Your last protocol will begin automatically

Operation without External Devices

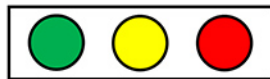
- The LED interface will report:
 - **Green:** miniPCR initializing or cooling
 - **Red:** miniPCR heating (lid or block)
 - **Yellow:** blinking yellow reports run error. Restart needed.

If problem persists contact support@minipcr.com

Quick Guide to LED Interface



- All LEDs flashing: protocol uploaded or device initializing



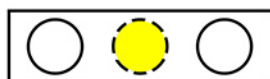
- All LEDs on: protocol complete



- Green LED: intermittent, lid heating; solid on, sample block cooling



- Red LED on: sample block heating



- Yellow LED flashing: error, reinitialize device or contact support

Troubleshooting and Maintenance

Troubleshooting

- Lid won't latch: ensure tubes are properly inserted into block and lid is at maximum height (turn knob counterclockwise).
- Run won't start: ensure power supply is plugged into AC outlet and the power supply LED is on. Check miniPCR power switch is in the ON position. Ensure protocol uploads and LEDs blink.
- miniPCR started too soon: miniPCR run will begin as soon as a protocol is uploaded or power is switched ON. Maintain power in the OFF position during protocol upload if you do not wish to start immediately.
- I left my samples in the miniPCR overnight after a run: PCR product is stable in PCR buffer at room temperature for >72h. There's no need to refrigerate samples immediately after a run.

If you need to contact miniPCR:
Phone: 781-990-8PCR
Email: support@minipcr.com
Mail: 1770 Massachusetts Ave., Suite 167
Cambridge, MA 02140

Maintenance

miniPCR™ thermal cyclers do not require regular maintenance. They can be cleaned using water or an acrylic cleaning agent. They should not come into contact with organic solvents or corrosive solutions. Ensure that no liquid enters the device. For safety reasons, the device must be switched off and disconnected from the power supply before cleaning.

The device may only be opened by qualified service personnel. The miniPCR Limited Warranty will be voided in the event of damage caused by unauthorized servicing.

Troubleshooting and Maintenance

Operating Conditions

miniPCR™ thermal cyclers are designed to be safe to operate under the following conditions:

- Indoor use
- Altitude up to 2,000 m
- Temperature 9 °C to 40 °C
- Maximum relative humidity 80% for temperatures up to 31°C, decreasing linearly to 50% relative humidity at 40 °C
- Main supply voltage fluctuations not to exceed $\pm 10\%$ of the nominal voltage
- Electrical supply by provided adapter, AC 100-240V, 50-60hz, 65-70W or higher
- Protection from accidental spills

Other use conditions will impinge on safety and performance and will void the Warranty.

Appendix A miniPCR Learning Labs and PCR Reagents (available at www.minipcr.com)

Description	Item No.
miniPCR Crime Lab – Missy Baker Missing	KT-1000-03
miniPCR Food Safety Lab – Tainted Patties!	KT-1001-03
miniPCR GMO Detection Lab – Heart-Shaped Bananas	KT-1003-01
miniPCR Genotype to Phenotype – PTC Taster Lab	KT-1004-03
miniPCR Human Genetics Lab – D1S80	KT-1002-01
EZ PCR Master Mix, 5X, Load Ready™	RG-1000-01
100 bp DNA ladder, Load Ready™, 20 lanes	RG-1001-01
X-Tract™ DNA extraction buffer	RG-1020-01
PCR tubes thin-walled 0.2ml - bag of 100	CM-1000-01