



## Release Notes for PTC Tempo Thermal Cyclers

### PTC Tempo Thermal Cycler Software Version 2.0.0.3

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## Introduction

PTC Tempo is the newest generation of thermal cyclers from Bio-Rad™. Thermal cyclers are essential laboratory equipment for laboratories that run polymerase chain reaction (PCR) for sequencing, cloning, mutagenesis, and many other applications. The fully adjustable heated lid supports a wide range of vessels and sealers, including low-profile and standard-height PCR plates.

Bio-Rad's newest thermal cyclers include:

- PTC Tempo 96 Thermal Cycler
- PTC Tempo 384 Thermal Cycler
- PTC Tempo Deepwell Thermal Cycler
- PTC Tempo 48/48 Thermal Cycler

## Main Features

The main features of the PTC Tempo thermal cyclers include:

- Connectivity to Bio-Rad's BR.io app to manage PCR protocol files and view run status

Using the BR.io app, you can create PCR protocols in the app, download and run them on your linked PTC Tempo thermal cycler, view run status remotely, and then upload the run report to the BR.io app.

For more information about Bio-Rad's BR.io app, go to [BR.io](#). From the BR.io Home page, you can

- Create a BR.io account
  - Explore the BR.io app via video
  - Access helpful BR.io user assistance pages
- Ability to integrate with laboratory automation systems using the PTC Tempo Automation API

For more information see the PTC Tempo 96, PTC Tempo 384, and PTC Tempo Deepwell API Reference Guide.

- Wireless and WLAN Ethernet network compatibility enables connectivity to your internal network for unlimited data access and storage on shared network drives as well connectivity to your BR.io cloud account
- USB drive compatibility provides an optional medium for protocol transfer and storage
- Programmable temperature gradient to quickly and easily identify optimal annealing temperatures

## Updating PTC Tempo Thermal Cyclers

This section explains how to update PTC Tempo thermal cyclers.

**Note:** Only Admin users can perform software and firmware updates on PTC Tempo thermal cyclers. Updates are performed via USB only.

Bio-Rad alerts you to available software and firmware updates through email. You can access updates from Bio-Rad's Firmware & Software Updates web site. The update file for PTC Tempo thermal cyclers can include operating system and software and firmware updates. All updates for the PTC Tempo thermal cycler are distributed in a single file.

Before updating the system, Bio-Rad recommends that you verify the current version installed on the PTC Tempo thermal cyclers. This section explains how to verify the installed version and how to update the thermal cycler.

### **To verify the current version of the PTC Tempo thermal cycler software**

1. Log in as an Admin user.
2. On the PTC Tempo thermal cycler's Home screen, tap Tools to view the Tools screen.
3. Tap About and note the currently installed software version on the About screen.
4. Ensure the version you are updating to is newer than the version currently installed.
5. Tap Back and then tap Home to return to the Home screen.

## To update PTC Tempo thermal cyclers

**Note:** Depending on the type of update, this process can take several minutes to complete.

1. In a network browser, log in to the Firmware & Software Updates page at [bio-rad.com/pcrupdates](http://bio-rad.com/pcrupdates) and download the update file onto a USB drive.

**Note:** Copy the update file into the root directory of the empty USB drive. Supported file system formats include exFAT, FAT32, and NTFS.

2. Insert the USB drive into a USB port on the PTC Tempo thermal cycler.
3. On the Home screen, log in as an Admin user and tap Tools to open the Admin tools screen.
4. On the Admin tools screen, tap System Update to open the Software and Instrument Updates screen.

The System Update screen appears prompting you to confirm that a USB drive containing the upgrade file is inserted.

5. Tap Continue.

The thermal cycler verifies that the update file is newer than the software version currently installed. When the update file is verified, you are prompted to confirm the update.

6. Do one of the following:
  - To cancel the update, tap No.
  - To update the system, tap Yes and follow the prompts.

**Important:** While the update is in progress, do not shut down the thermal cycler and do not remove the USB drive.

### Notes:

- Determining the operating system version can take time.
- When the update completes, the system automatically restarts. If a Firmware update is required, the system restarts twice.

## [PTC Tempo Thermal Cyclers Documentation](#)

Bio-Rad's PTC Tempo Thermal Cyclers web site provides access to:

- PTC Tempo Thermal Cyclers Release Notes (this document)
- PTC Tempo Thermal Cyclers Instrument Guide
- Training videos to guide you through basic conventional PCR experiments

**Important:** The PTC Tempo Thermal Cyclers Instrument Guide provides specific information about installing, setting up, and using the thermal cyclers.

### **To access PTC Tempo Thermal Cyclers documentation**

1. In a web browser, log in to Bio-Rad.com and navigate to [bio-rad.com/PTCTempo](http://bio-rad.com/PTCTempo).
2. Scroll to the Documents section and select the PDF icon for document of choice.

The PDF opens in your web browser. You can then download the document to your computer.

## PTC Tempo Thermal Cyclers Additional Information

### Cybersecurity and PTC Tempo Thermal Cyclers

**Important:** Cybersecurity is the protection of assets in cyberspace from cyberattacks. Cybersecurity is Bio-Rad's ability to secure its people, information, systems, and reputation in cyberspace. Cyberspace is the always-on, technologically interconnected world; it consists of people, organizations, information, and technology.

Fast reaction is important with cybersecurity issues! If you suspect that there may be a cybersecurity issue concerning your instrument or that cybersecurity has been breached at your site, contact your Bio-Rad representative for technical support immediately.

### Running PTC Tempo Protocols on C1000 Touch Thermal Cyclers

You can run PTC Tempo protocols on C1000 Touch thermal cyclers as well as CFX Opus real-time PCR instruments.

#### **To run PTC Tempo protocols on C1000 Touch thermal cyclers**

1. On the PTC Tempo thermal cycler, ensure the file name meets the requirements for C1000 Touch thermal cyclers. See the C1000 Touch Operation Manual for specific information.
2. Export the protocol file to an attached USB drive.
3. On a Windows computer, move the protocol to a subfolder on the USB drive.
4. Insert the USB drive into a USB port on the C1000 Touch thermal cycler and navigate to that subfolder.

### Using Write-Protected (Read-Only) USB Drives with PTC Tempo Thermal Cyclers

PTC Tempo thermal cyclers do not recognize USB drives that are set as read-only through a computer's operating system.

That is, USB drives that a user has inserted into a computer and used the computer's operating system to set the properties of the USB drive to Read-only are not recognized as read-only when inserted into the PTC Thermal cycler. Users can copy and save protocols to, and delete protocols from, such USB drives.

PTC Tempo thermal cyclers recognize only those USB drives that have an external manual switch as write-protected.

## Running BR.io Protocols with Long Protocol Names or Names that Contain Single Quotes in the Name

The PTC Tempo thermal cycler considers single quote marks ( ' ) as invalid characters. If your protocol name contains a single quote mark, it will be substituted with an underscore ( \_ ). The PTC Tempo thermal cycler does not support protocols names greater than 32 characters in length. If your protocol name contains more than 32 characters, the PTC Tempo thermal cycler truncates all characters after the 32nd.

## Running Legacy Protocols with Long Protocol Names or that Contain Single Quotes in the Name

The PTC Tempo thermal cycler considers single quote marks ( ' ) as invalid characters. As well, the PTC Tempo thermal cycler does not support protocols names greater than 32 characters in length. If you are running a protocol from an attached USB drive or a shared network drive that contains a single quote mark and/or more than 32 characters in its name, you must return to the location of the original protocol and rename it before starting the run.

**Note:** In the case of running from a USB drive:

1. Remove the USB drive from the PTC Tempo thermal cycler.
2. Insert the USB drive into the computer from which you copied the original protocol and rename the protocol.
3. Copy the renamed protocol onto the USB drive.
4. Reinsert the USB drive into the PTC Tempo thermal cycler and start your run again.

## The PTC Tempo Thermal Cycler Continues a Run In Progress after Power is Restored Though Plate Has Been Removed

The PTC Tempo thermal cycler continues the run that was in progress when power is restored after a power failure. This is as designed.

If the user manually opens the lid and removes the plate during the power failure and does not close the lid, the instrument does not detect that the lid is open and attempts to continue the run.

In this case, when power is restored to the instrument, tap Run Status on the Home screen. On the Run Status screen tap Stop Run to stop the run.

## **PTC Tempo Thermal Cyclers Fixed Defects**

Version 2.0 of the PTC Tempo thermal cycler includes these defect fixes.

### **Users Can Clear the Folder Path and Connection Fields After Connecting to a Shared Network Folder**

- The Folder Path and Connection fields on the User Profile screen can be cleared and remain blank if a user chooses to disconnect from a shared network folder.

If the user chooses not to connect to a different shared network folder, Network does not appear in the left pane in the Protocol Browser and the Folder Path and Connection fields on the User Profile screen are empty as expected.

### **The Lid Heater Tray No Longer Extends out of the Lid when Close Lid is Tapped and the Lid Is Not Completely Closed**

- When a user manually closes the lid after powering off the instrument and does not close the lid completely, the lid heater tray remains in the lid when the user powers on the instrument and taps Close Lid on the Run Setup screen.

## PTC Tempo Thermal Cyclers Known Issues

### Incorrect Error Message Appears when Attempting to Set a Static IP Address with No Network Connection

- If an Admin user attempts to set a Static IP when a network connection cannot be found, the message that appears after applying the settings is incorrect. The message indicates that the static IP address is invalid. The System log indicates that attempting to set a static IP address failed.

**Workaround:** Verify the instrument has a valid network connection either by Wi-Fi or Ethernet cable and perform the procedure again.

### Invalid IP Addresses Appear to Be Accepted As a Static IP Address

- If an Admin user enters an invalid Static IP address on the Network Settings screen and taps Apply to save the settings, no connection is established and the values in the settings fields disappear. However, no error message appears informing the user that the static address is invalid. Viewing the System log indicates that the invalid IP address was accepted, and the system has a valid Static IP connection.

The system appears to accept a valid Static IP address afterward. However, after the user leaves the Network Settings screen and then returns to the screen later, the settings disappear and the connection is lost

**Workaround:** To set a static IP address, ensure the instrument is connected to a LAN using the Ethernet cable or a network switch. On the Networks Settings screen, select Dynamic and tap Apply. Restart the instrument and perform the procedure again.

### Run Status Screen for Block A Appears Blank after Power Resumption if a Run Is in Progress on Both Blocks

- If both Block A and Block B have runs in progress during a power outage on a PTC Tempo 48/48 thermal cycler, the Run Status screen for Block A appears blank while the Run Status screen for Block B displays the current run status after power resumes.

**Workaround:** To display the current status of Block A, navigate to the Home screen and tap Run Status to return to the Run Status screen and then tap Block A.

## PTC Tempo Can Appear to Freeze after Attempting to Load Protocols from a Shared Network Drive

- After connecting to a shared network file by tapping Network in the Protocols Browser, the PTC Tempo thermal cycler screen can appear to freeze. Until the protocols load, tapping any element on the screen produces no effect.

After a couple minutes, the Protocols list populates, and the user can select and run Network protocols.

**Note:** This issue occurs only if the user's network is slow.

## PTC Tempo Does Not Resume a BR.io Protocol Run if a Power Failure Occurs while the Run Is in Progress

- If a power failure occurs while the PTC Tempo thermal cycler is running a BR.io protocol that contains an apostrophe ( ' ) in the name, the thermal cycler does not resume the run when power is restored. The Run Report and the System Log both indicate that a power failure occurred.

When power returns, the user can rerun the protocol.

**Recommended:** PTC Tempo thermal cyclers do not accept certain special characters including ( ' ) in the name of protocols. Rename BR.io protocols containing any special character to avoid this issue should a power failure occur.

## PTC Tempo Does Not Display an Error Message when Copying to a Write-Protected USB Drive

- No error message appears when a user attempts to copy a protocol to a write-protected USB drive. An error message does appear when the user attempts to Save to a write-protected USB drive.

**Note:** Users can copy and save to and delete protocols from USB drives whose Properties are set to Read-only. To ensure the write-protection of your USB drive, use only USB drives that have an exterior write-protection switch.

## Run Status Screen and Run Report Generated after a Lid Error Are Incorrect

- If a lid error occurs during a run, the thermal cycler stops the run. This is as designed.

However, the Run Status screen does not indicate that the run was stopped because an error occurred. Instead, the Run Status screen indicates that the run was stopped.

The associated run report does not indicate that an error occurred during the run. Instead, the run report indicates that the run completed with no errors and was stopped by the user.

## Run Reports Do Not Upload to BR.io if a Power Failure Occurs During the Run

- If a user is connected to BR.io and a power failure occurs during a protocol run, the run report is not uploaded to BR.io. When power is restored, the run will continue. When the run completes the Run Status screen displays that a power failure occurred.

**Note:** The run report is saved on the instrument and can be exported to an attached USB drive.

## Protocols Are Not Deleted from NTFS or exFAT Formatted USB Drives

- The PTC Tempo thermal cycler enables users to copy protocols to and delete protocols on attached USB drives. However, when reinserted into the PTC Tempo instrument, protocols that the user deletes on NTFS or exFAT formatted USB drives reappear in the Protocol Browser when USB is selected on the Protocol Browser within 35 sec of deletion.

**Workaround:** To confirm the protocol was deleted, wait 35+ sec after deleting the protocol before selecting USB on the Protocol Browser.

**Note:** If necessary, the user can also insert the USB drive into a compatible computer and follow its file-deletion process.

## System Log Entry when Admin User Exports Run Reports Is Incorrect

- When an Admin user exports run reports for protocols run by other users, the System Log entry displays that the run reports were exported by the user who ran the protocols rather than the Admin user.

**Note:** The System Log entry for the logged in user is correct. That is, the System Log displays that the logged in user is the Admin user, indicating that the Admin user performed the export.

## The Gateway Details Do Not Appear on the Network Settings Screen when Connected to Both a WiFi Dongle and Ethernet Cable

- The PTC Tempo can connect to the Internet by a Bio-Rad-supplied WiFi dongle or by Ethernet cable. If you have connected to the Internet by WiFi dongle and then inserted an Ethernet cable into your PTC Tempo thermal cycler, the instrument defaults to Ethernet connection. However, the Gateway details do not appear on the Network Settings screen.

**Workaround:** Remove the WiFi dongle to view the Gateway details.

## PTC Tempo Appears to Hang when Opening Very Large Run Reports

- The PTC Tempo thermal cycler software appears to hang when opening run reports that might be longer than 35 pages.

**Workaround:** If your run report might be longer than 35 pages, export the run report to an attached USB drive and open the report on a compatible computer.

### Exported Run Reports More Than Several Pages in Length Display Formatting Issues

- The top margin on the PDF of exported run reports that are greater than several pages in length gets smaller with each successive page. If the report is very long (greater than 10 pages) the rows in the Run Details table are cut off.

### PTC Tempo Appears to Hang if the User Attempts to Load BR.io Protocols and the System Is Not Connected to the Network

- The PTC Tempo thermal cycler appears unresponsive if the user taps BR.io on the Protocol Browser when it is not connected to the network. The system does not display a message to the user regarding its status for approximately 2 min.

After approximately 2 min the PTC Tempo thermal cycler displays an error message to the user. Tap OK to clear the message and then connect the instrument to the network. When successfully connected, return to the Protocol Browser and tap BR.io again.

### Export Dialog Box Does Not Display All Characters of Some Exported Run Report PDFs

- PTC Tempo exports run reports in PDF format. The default naming convention of the run report .pdf file is <ProtocolName>\_<DateAndTimeOfExport>\_<NameOfUserWhoRanTheProtocol>. If the protocol name and the name of the user who ran the protocol are both close to or are 32 characters in length, the Export dialog box does not wrap the protocol name efficiently and might not display all characters on the screen.

**Note:** This does not affect the exported .pdf file. The .pdf filename is complete, and the file opens correctly.

### PTC Tempo Appears to Hang after Tapping the Back Button on the Edit Protocol Screen

- If a user selects a network protocol to edit and taps the Back button on the Edit Protocol screen, the PTC Tempo thermal cycler appears to hang. The Back button appears disabled, and the screen is unresponsive.

After a period of time, the thermal cycler displays the Protocol Browser and the screen responds to touch commands.

## An Error Message Appears after Clearing a Failure to Connect Message and then Tapping the Back Button

- The PTC Tempo thermal cycler displays a Failure to Connect error message when the user attempts to save a protocol from the Save Protocol screen after network connection is lost. When the user taps OK to clear the error message and then taps Back on the Save Protocol screen to return to the Protocol Browser, the same error message appears again.

**Workaround:** Tapping OK on the second error message returns the user to the Protocol Browser correctly.

## Contacting Technical Support

Bio-Rad Technical Support in the United States is open Monday–Friday, 5:00 AM to 5:00 PM, Pacific Time.

**Phone:** 1-800-424-6723, option 2

**E-mail:** [Support@bio-rad.com](mailto:Support@bio-rad.com) (U.S./Canada Only)

For technical assistance outside the U.S. and Canada, contact your local technical support office or click the Contact us link at [bio-rad.com](https://www.bio-rad.com).

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