Bio-Rad Laboratories, Inc.

Release Notes for CFX Maestro Software and CFX Opus Real-Time PCR Systems

CFX Maestro Version 2.4 and CFX Opus Version 1.5

November 2024

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Introduction

CFX Maestro Software is a powerful software package that allows you to collect and analyze real-time PCR data from CFX real-time PCR detection systems. With just a few clicks, you can design and run qPCR experiments, and then perform statistical analyses on the collected data. You can perform t-tests, ANOVA, and hierarchical clustering, as well as create publication-ready charts directly within the software. CFX Maestro Software also integrates closely with PrimePCR assays and arrays, allowing you to rapidly set up experiments, automate analysis of PrimePCR controls, and select reference genes for normalization.

Version 2.4 of CFX Maestro Software is compatible with Bio-Rad's newest CFX real-time PCR systems:

- CFX Opus 96 Real-Time PCR System
- CFX Opus 384 Real-Time PCR System
- CFX Opus Deepwell Real-Time PCR System
- CFX Duet Real-Time PCR System

System Requirements

System Requirements for CFX Maestro Software Standard and Security Editions

Table 1 lists the minimum and recommended system requirements for computers running the current version of CFX Maestro Software Standard Edition or Security Edition.

Table 1. System requirements for CFX Maestro Software (Standard and Security editions)

System	Minimum	Recommended
Operating system	• Microsoft Windows 10 (64-bit only), Build 1511 or later • Microsoft Windows 10 Pro	Microsoft Windows 11
Important: Secure Boot must be disabled on both Microsoft Windows 10 Pro and Enterprise.		
Ports	2 USB 2.0 High-speed ports	2 USB 2.0 High-speed ports
Hard disk space	128 GB	128 GB
Processor speed	2.4 GHz, Dual Core	2.4 GHz, Dual Core
RAM	4 GB RAM	8 GB RAM
Screen resolution	1024 x 768 with true-color mode	1280 x 1024 with true-color mode
PDF Reader		Adobe PDF Reader or Windows PDF Reader from one of the supported Microsoft Office Suites: • 2016 • 2019
Localization	Supported Microsoft Windows 64-bit OS in English, Chinese, and Russian	Supported Microsoft Windows 64-bit OS in English, Chinese, and Russian
Note: Depending on the localization version of the software, CFX Maestro displays analysis data in English, Chinese, or Russian when Windows 11 is configured for other languages.		

System	Minimum	Recommended
Note: CFX Maestro 2.4 does not recognize the MiniOpticon system on computers running the Microsoft Windows 10 operating system.		

Installing CFX Maestro Software

Note: To activate Security Edition after you install or upgrade to CFX Maestro Software 2.4, see the CFX Maestro Software, Security Edition User Guide.

Important: Before starting the installation process, ensure that you have saved all runs and that no experiments are running.

Installing CFX Maestro Software

Important: You must disconnect any connected instruments from the CFX Maestro Software computer before you install or upgrade the software. You do not need to turn off the instrument during the software installation.

Note: If you are installing CFX Maestro Software on either version of Windows 10 (Professional or Enterprise) or Windows 11, ensure that Secure Boot is disabled before beginning the installation procedure.

To install CFX Maestro Software

1. Insert the CFX Maestro Software USB drive into the computer's USB port.
2. In Windows Explorer, navigate to and open the CFX Maestro Software USB drive.
3. Open the CFX folder and double-click CFXMaestroSetup.exe to install CFX Maestro Software.
4. Follow the instructions on the screen to install the software.
5. When completed, the Bio-Rad CFX Maestro Software shortcut icon appears on the desktop.
6. When the installation completes, safely remove the software USB drive from its port.

Tip: Before removing the software USB drive, consider installing the CFX Maestro Software documentation. See To install CFX Maestro Software documentation on page 9 for more information.

Upgrading CFX Real-Time PCR Detection Systems

This section explains how to upgrade the CFX real-time PCR detection systems. For more information, refer to the CFX Maestro Software User Guide.

Upgrading CFX Duet, CFX Touch, and CFX Connect Real-Time PCR Detection Systems

Note: The upgrade process can take up to 20 minutes. During the update, a progress bar appears on the CFX Maestro Software computer. Do not shut down the computer or the connected instrument during the update.

To upgrade CFX Duet, CFX Touch, and CFX Connect Real-Time PCR Detection systems

1. On the CFX Maestro Software computer, start CFX Maestro Software. CFX Maestro Software automatically connects to the instrument to which it was last connected before the software update.
2. A dialog box prompts you to update the software on the system. Click Update System.
3. In the Software and Instrument Updates dialog box select the Instruments checkbox and then select the checkbox for each instrument that requires an update.
4. Click Update.
5. Restart each instrument after the upgrade completes.

Upgrading CFX Opus Real-Time PCR Systems

Note: Only the Admin user can perform software and firmware updates on CFX Opus Real-Time PCR Systems. CFX Opus Real-Time PCR System are performed via USB only.

Important: Users who have upgraded their CFX Opus instruments to version 1.3 and use CFX Maestro to run protocols and analyze data must also upgrade CFX Maestro to version 2.4. Failure to update CFX Maestro to version 2.4 for CFX Opus 1.3 instruments will prevent a user from running CFX Maestro for CFX Opus. Refer to the CFX Maestro Software User Guide for instructions on how to update the CFX Maestro Software.

CFX Opus alerts you to available software and firmware updates if connected to the internet. You can access updates from Bio-Rad's Firmware and Software Updates web site. The installer for CFX Opus systems can include both software and firmware updates. Firmware updates for CFX Opus systems are not distributed in a separate package.

Before upgrading the system, Bio-Rad recommends that you verify the current version installed on the CFX Opus system. This section explains how to verify the installed version and how to upgrade the system.

To verify the current version of the CFX Opus system software

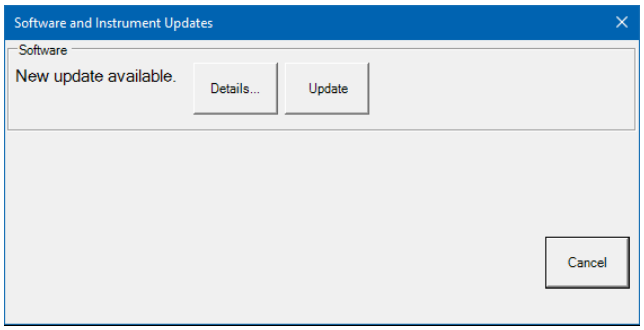
1. Log in as Admin.
2. On the CFX Opus system's Home screen, tap Tools to view the Tools screen.
3. Tap About and locate the Opus version on the About screen.
4. Note the currently installed version.
5. Ensure the version you are upgrading to is newer than the version currently installed.
6. Tap Back and then tap Home to return to the Home screen.

To upgrade CFX Opus Real-Time PCR software and firmware

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

1. On the computer running CFX Maestro Software, navigate to the Firmware & Software Updates page at www.bio-rad.com/pcrupdates and download the upgrade installer onto the USB drive.
2. Insert the USB drive into a USB port on the CFX Opus Real-Time PCR System.
3. On the Home screen, log in as the Admin user and open the Admin tools screen.
4. On the Admin tools screen, tap System Update to open the Software and Instrument Updates screen.

   The Software and Instrument Updates screen appears.



   Important: While the upgrade is in progress, do not shut down the system and do not remove the USB drive.
5. (Optional) To get details about the update, tap Details.
6. Do one of the following:
   - To cancel the upgrade, tap Cancel.
   - To upgrade the system, tap Update and follow the prompts.

   Note: When the upgrade completes, the system automatically restarts.

Removing the CFX Opus Real-Time PCR System Shipping Screw

Important: The CFX Opus system ships with a red shipping screw inserted in the side of the lid to stabilize it during transport. You must remove the shipping screw before you can operate the system.

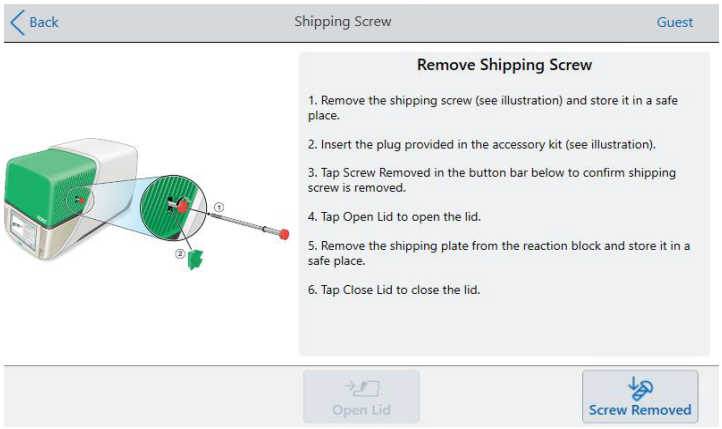
To remove the shipping screw

1. Locate the shipping screw plug that ships with the CFX Opus system.

   Tip: This might be in a plastic sheath taped to the front or side of the instrument.
2. Ensure the power cord is properly inserted into the power input on the back of the instrument.
3. If you have not yet done so, insert the other end of the power cord into an available grounded, surge protected AC outlet.
4. Press the power switch on the back of the instrument to start the CFX Opus system.

5. The system recognizes that the shipping screw is inserted and displays a message on the touchscreen instructing you to remove the screw. Tap OK.

   The Remove Shipping Screw instructions appear.



6. To remove the shipping screw, turn it counterclockwise and then pull it straight out of the access hole. Set the screw in a safe place.

   Caution: Do not insert the shipping screw or any other object in the shipping screw hole while instrument is operating. Internal moving parts might collide with the object, which can cause personal injury or damage the system.

CFX Maestro Enhancements and Changes

CFX Maestro 2.4 Update Required to Display Analysis Data in Non-English Windows 11 Operating Systems

You must update CFX Maestro or CFX Maestro Security Edition to version 2.4 to display analysis data if your Windows 11 operating system is configured for another language other than English, Russian, or Chinese, depending on Maestro software's localization.

Note: The analysis language will display in English, Russian, or Chinese.

CFX Maestro Software Known Issues

CFX Maestro Not Recording Skip Step in Audit Log

CFX Maestro is not recording a skip step in the CFX Maestro Audit Log when the software is running a protocol on a CFX Opus system.

Workaround: The skip step is recorded in the Run Report of the CFX Opus system.

Volcano Plot Defect (Volcano Plot Tab for Gene Expression and Study Analysis)

- When a user changes the plot's color scheme (right-click menu option), it does not take effect.
  Workaround: After changing the color scheme, click on one of the threshold bars, or right-click in the plot and change the symbol.

Bar Chart Defects (Graphing Tab for Gene Expression and Study Analysis)

- The Bar Chart does not always scale the data to fill the chart horizontally.
  Workaround: Right-click in the chart and select Set Scale to Default > Show All.
- When Analyze Using is set to Biological Groups Only, the chart's right-click menu displays the Use Corrected Std Devs (use corrected standard deviations) option, which is not applicable and has no effect on the chart.
  Workaround: None
- When a user changes the sort order of samples, targets, or biological groups on the Bar Chart, the sort order reverts to the default after the user makes a change to the colors of the target, sample, or biological group. This applies only to .pcrd files and not to .mgxd (gene study) files.
  Workaround: None
- If a value in the Gene Expression Data Table exceeds ±10.0E13, it is not displayed (the table cell is blank).
  Workaround: The data are available in the data analysis report (see Tools > Reports) and the exported data (right-click on the table and select one of the export options).

(Chinese operating systems only) Help Topics Do Not Open Using the F1 Key or ? Icon

- On Chinese operating systems, CFX Maestro Help topics do not open when pressing the F1 key or clicking the question mark (?) icon on any screen.

  Workaround: Click Help on the main menu to launch the Chinese Help system.

CFX Maestro Software Documentation

The CFX Maestro Software USB drive contains the CFX Maestro Software documentation installer, CFX_Documentation.exe. This installer installs the CFX Maestro Software User Guide as a PDF, which you can access on the Help menu in any CFX Maestro view. This installer also installs the CFX real-time PCR system instrument guides. Information about CFX systems and CFX Maestro Software is available from the following sources:

- CFX Opus 96 Real-Time PCR System, CFX Opus 384, and CFX Opus Deepwell Real-Time PCR System instrument guide
- CFX Duet Real-Time PCR System instrument guide
- C1000 Touch and CFX Connect instrument guides
- CFX Maestro and CFX Maestro for Mac software user guides
- CFX Maestro Software, Security Edition user guide

  Tip: Read this document to activate Security Edition.
- Training videos to guide you through basic qPCR processes with the CFX Maestro Software

Important: Installing the CFX Maestro Software User Guide gives you access to the CFX Maestro Software installation information.

To install CFX Maestro Software documentation

1. Insert the CFX Maestro Software USB drive in the CFX Maestro Software computer's USB port.
2. In Windows Explorer, navigate to and open the CFX Maestro Software USB drive.
3. Double-click CFX_Documentation.exe to install the CFX Maestro Software documentation.
4. Follow the onscreen installation instructions.
5. After the installation completes, you can safely eject the software USB drive.

To access CFX Maestro Software documentation

u On the Help menu in CFX Maestro Software, do any of the following:

- Click Contents, Index, or Search to open the complete online Help system.
- Select Open User Guide to open the CFX Maestro Software User Guide PDF.
- Select Additional Documentation to display all of the installed CFX documentation.
- Select Video Resources to access the CFX Maestro instructional videos.

CFX Maestro Software Additional Information

Validation and Certification

This version of CFX Maestro Software was validated internally by comparison with industry-standard software for qPCR and statistical analysis. This version of CFX Maestro Software is certified to perform available statistical analyses equivalent to SAS.

CFX Maestro Software Displays Different Run Time Estimates for CFX Opus Real-Time PCR Systems Compared to CFX Touch Real-Time PCR Detections Systems

When running the same protocol simultaneously on different CFX real-time instruments, CFX Maestro Software calculates and displays a shorter run-time estimate for the protocol running on CFX Opus Real-Time PCR Systems compared to CFX Touch Real-Time PCR Detection Systems. The run-time estimate displayed for the CFX Opus Real-Time PCR System is more accurate.

Note: The actual run time is the same for both systems.

Adding Additional Repeats During a GOTO Cycle in CFX Maestro Software

You can add additional repeats while in a GOTO cycle in CFX Maestro Software. However, CFX Maestro Software recognizes the most recent change in the number of repeats. For example, if you add 10 additional repeats while in a GOTO cycle, the software will change the total number to n + 10. If you then add an additional 5 repeats while in the same cycle, CFX Maestro Software will change the total number of repeats to n + 5. The first change (10 repeats) is ignored. To ensure the software performs the target number of repeats, enter the total number (in this case, 15 repeats).

Whitelisting CFX Maestro Software Files and Folders

In order to protect against viruses and malware, your IT department might have implemented very tight software security measures. These measures might impact the time to upgrade or run CFX Maestro Software.

To improve the performance of CFX Maestro Software, Bio-Rad recommends that your IT department whitelist the following files and folders in the Firewall settings in your antivirus software installed on the CFX Maestro Software computer:

Folders

C:\Program Files (x86)\Bio-Rad\CFX

C:\ProgramData\Bio-Rad\CFX

C:\Users\Public\Documents\Bio-Rad\CFX

Files

All .exe files located in the folder C:\Program Files (x86)\Bio-Rad\CFX

Connecting CFX Maestro Software to a Commercial Webmail Service

Some commercial webmail service providers (such as Yahoo! and Gmail) have increased email security. If you use these accounts, you must enable the Allow less secure apps setting to enable CFX Maestro Software to send email. See the security information for your webmail service provider for more information.

CFX Opus Real-Time PCR System Fixed Defects

Version 1.5 of the CFX Opus system includes this defect fix.

CFX Opus System Signal Spike in RFU Charts

The CFX Opus system firmware is updated to eliminate signal spikes that appeared in Relative Fluorescence Units (RFU) charts during the optical scanning process. The system's optical scanner now rescans individual wells if an error or inconsistency is detected during scanning. This update does not affect the Maestro 2.4 software.

CFX Opus Real-Time PCR System Known Issues

Under CFX Maestro Software Remote Control, CFX Opus Real-Time PCR Systems Allow Any User Role Access to On-Screen Functions

- When under control, CFX Opus Real-Time PCR Systems allow any CFX Maestro Software user role to perform the following functions:
    - Start run
    - Pause run
    - Stop run
    - Skip step

The CFX Opus Real-Time PCR System's Touch Screen Might Freeze If a Power Failure Occurs while Processing Data

- The CFX Opus Real-Time PCR System might freeze on the Status screen if a power failure occurs while processing data. The resulting run file successfully saves to the predetermined Save Location. The file can be copied to an attached USB or to a shared network drive and opened in CFX Maestro.

Workaround: Reboot the CFX Opus Real-Time PCR System to activate the touch screen

Users Cannot Save Multiple Files with the Same Name on CFX Opus Real-Time PCR Systems

- The CFX Opus Real-Time PCR System will not save a file if it detects another file with the same name, even if the previous file was deleted.

  Workaround: Save the new file with another name.

CFX Opus Real-Time PCR Systems Can Crash When an Unsecure Wi-Fi Connection Is Lost

- The CFX Opus Real-Time PCR System does not support Wi-Fi connections that require secondary browser authentication. When the connection is lost, the CFX Opus Real-Time PCR System might crash.

  Workaround: Connect the CFX Opus Real-Time PCR System to a secure Wi-Fi access point.

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 (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 www.bio-rad.com.

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