

CFX96 and CFX384 Firmware Update Instructions

Overview

This document contains instructions for updating firmware contained in the CFX96 or CFX384 real-time PCR systems. These systems contain a total of five user accessible firmware installations, three for the C1000 thermal cycler chassis and two for the CFX96 or CFX384 optical reaction module. Firmware, corresponding file names and the versions displayed in the C1000 are as follows:

Firmware	File Name	Current Version (as of 22 Oct 2009)
PXA270 processor firmware	nkupdate.bin	3.0.59.1016
HC12 thermal control firmware	update.s19	1.0.150.0
FX2 USB controller firmware	fx_2_sat_bulk.dld	1.35
8051 CFX SmartLid firmware	slidmain.dld	0.54
DSP CFX Optical firmware	optheadlp1.dld	1.123

Firmware upgrades are performed by placing a USB thumb drive containing the appropriate files into any USB port on the C1000 thermal cycler chassis when the CFX96 or CFX384 optical module is installed.

For any questions or problems you may encounter, please contact Bio-Rad Laboratories www.bio-rad.com. For technical support in the United States and Canada, call 1-800-424-6723 (toll-free phone), and select the technical support option.

Updating Firmware Instructions

Obtain the Most Recent Firmware Files

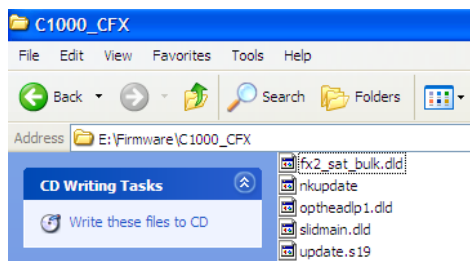
- 1) Obtain the most recent firmware files for NKUPDATE.BIN, UPDATE.S19, FX2_SAT_BULK.DLD, OPTHEADLP1.DLD and SLIDMAIN.DLD by copying them from the CFX Manager Software version 1.6 installation CD, contacting your local Bio-Rad technical support department, or downloading them from www.bio-rad.com.

Locate the firmware update files from the CD:

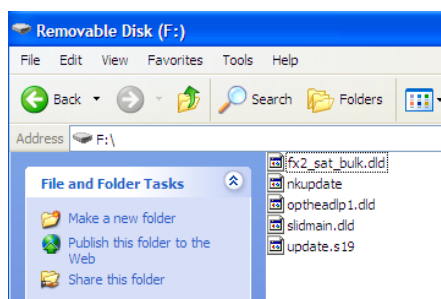
- **Windows XP** – Insert the CD. When the flash screen opens, click **Firmware** section and open the **C1000_CFX** folder.
- **Windows Vista** – Insert the CD. Click **Open folder to View Files** option. Go to the Firmware folder and open the **C1000_CFX** folder.

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The correct files are listed as shown below:



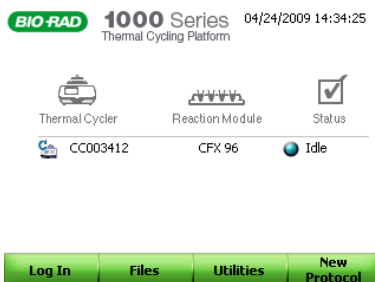
- Copy the five firmware files onto an empty Bio-Rad USB Thumb drive (supplied with the instrument). Ensure there are no older versions of the firmware files on the thumb drive. When formatted correctly for firmware upgrade, the USB thumb drive will list the files exactly as shown in the figure below:



NOTE: If you obtain the firmware files from technical support or the Bio-Rad website they may be compressed in a zip file format. Ensure the files are unzipped before transferring them to the USB key by clicking on the zip file and extracting the files. Ensure the firmware files are copied to the root directory of the USB thumb drive and not to a folder on the thumb drive. The file names and the USB key format must match exactly as shown in the figure above for the firmware update to complete successfully.

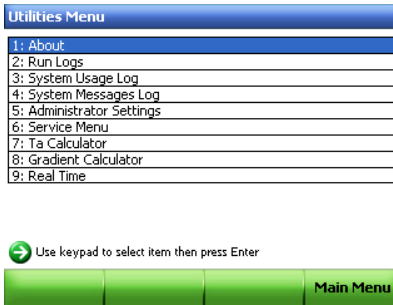
Record The Currently Installed Firmware Versions

- Insert the USB thumb drive into any available USB port on the C1000 thermal cycler chassis.
- Turn on the instrument.
- When the CFX96 or CFX384 system is fully booted and shows the main menu screen press **Utilities** (F3).

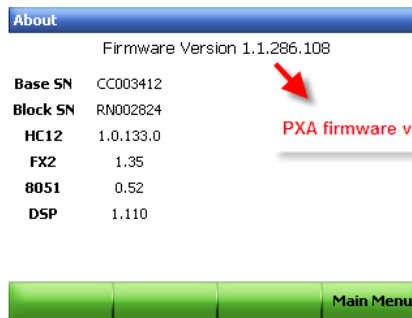


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- 6) Using the up and down keypad arrows, highlight **About** and then press **Enter**.



- 7) The firmware versions currently installed will be displayed as shown in the image below.



- 8) Record the firmware versions currently installed on your instrument in the table below:

Firmware	Name Listed on Screen	Current Version	Installed Version
PXA270	Firmware Version	3.0.59.1016	_____
HC12	HC12	1.0.150.0	_____
FX2	FX2	1.35	_____
8051 SmartLid	8051	0.54	_____
DSP	DSP	1.123	_____

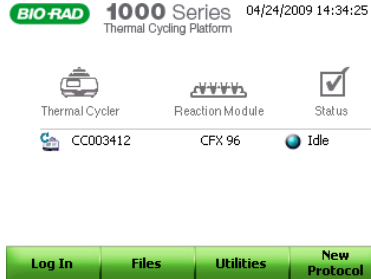
- 9) Compare your installed firmware versions with the current firmware versions listed in the table below. Use the instructions in the following sections to update individual firmware files that do not match the current version release.

IMPORTANT: Ensure the current and latest version of the PXA270 (NKUPDATE.BIN) is installed first before any other firmware upgrades. The latest version of the PXA270 firmware is required to enable the upgrade of other firmware.

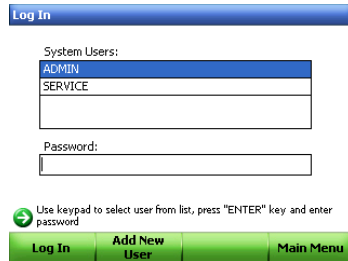
Install required firmware upgrades in the order outlined in the instructions below.

Login as Administrator

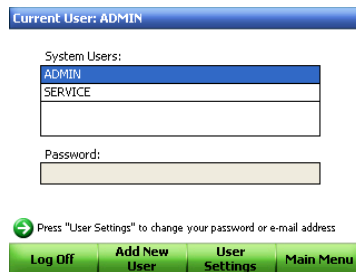
- 10) Press **Main Menu** (F4) to return to the Main Menu screen.
- 11) Press **Log In** (F1) to log in to the thermal cycler to perform the firmware updates.



- 12) Highlight **ADMIN** under System User and press **Enter**. The cursor moves to the Password field.



- 13) Leave the Password field blank and press **Enter** again. The password field turns grey and the Current User in the screen title bar indicates **ADMIN**.



- 14) Return to the main menu screen by pressing **Main Menu** (F4).
- 15) Open the Utilities screen by pressing the **Utilities** button (F3).
- 16) If the current PXA270 firmware is version 1.0.229.114 (recorded above in step 8), proceed directly to step 17. below.
If the current PXA270 firmware is later than version 1.0.229.114, highlight **Administrator Settings** and press **Enter**.

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Utilities Menu	
1:	About
2:	Run Logs
3:	System Usage Log
4:	System Messages Log
5:	Administrator Settings
6:	Service Menu
7:	Ta Calculator
8:	Gradient Calculator

→ Use keypad to select item then press Enter



17) Highlight **Update System** and press **Enter**.

Administrator Settings Menu	
1:	Set Date/Time
2:	Set Access Level
3:	Log Files Management
4:	System Backup and Restore
5:	User Management
6:	Incubate Settings
7:	Update System
8:	Diagnostic Test
9:	SMTP Server Settings

→ Use keypad to select item then press Enter



Update PXA270 firmware

18) Use the down arrow key to highlight **PXA270 Updater** and press **Enter**.

Update Menu	
1:	HC12 Updater
2:	PXA270 Updater
3:	FX2 Updater
4:	DSP Updater
5:	8051 Updater

→ Use keypad to select item then press Enter



NOTE: PXA270 is listed SECOND (2:) in the update menu. **Do not** select HC12 at this time.

19) Press **Enter** again to proceed.

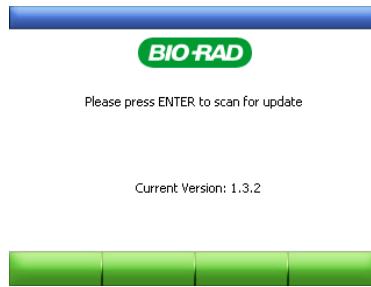
Update Menu	
1:	HC12 Updater
2:	PXA270 Updater
3:	FX2 Updater
4:	DSP Updater
5:	8051 Updater

→ Update firmware version? Press Enter to proceed.

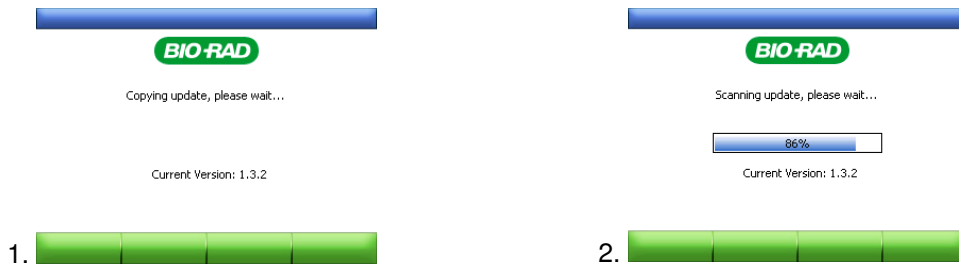


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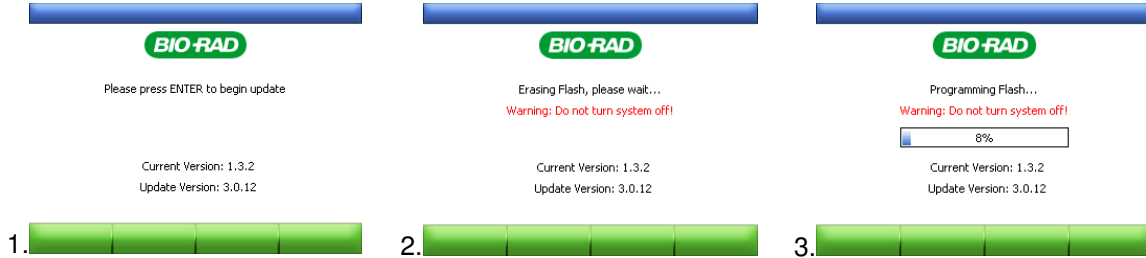
20) The Update screen appears with the currently installed version displayed.



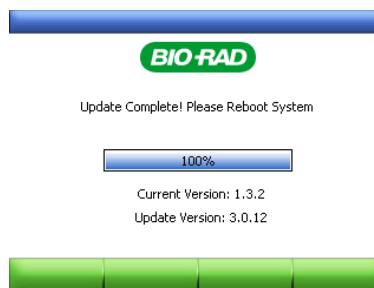
21) When ready, press **Enter**. The system scans the thumb drive for the necessary file (NKUPDATE.BIN). The system copies the update file to memory and then scans the file.



22) Press **Enter** to start the update process. **Do Not** turn off power or remove any devices during this process. This process will take 4 - 5 minutes to complete.



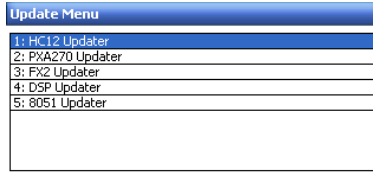
23) When the update has completed the system indicates "Update Complete! Please Reboot ALL Systems." Turn off the instrument, then turn it back on.



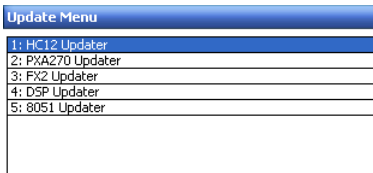
Update HC12 firmware

24) Repeat steps 11-17 (login to the thermal cycler as **ADMIN** and return to the **Update Menu**).

25) Highlight **HC12 Updater** and press **Enter**.



26) Press **Enter** again to proceed.



27) The Update screen appears with the currently installed version displayed.

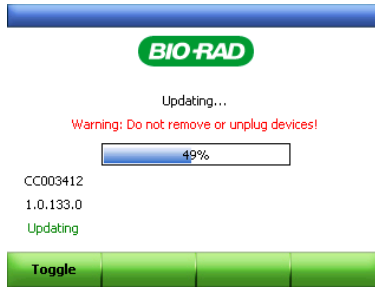


28) When ready, press **Enter**. The system scans the thumb drive for the necessary file (UPDATE.S19). The message "Please press ENTER to begin update" is presented. Press **Enter**.

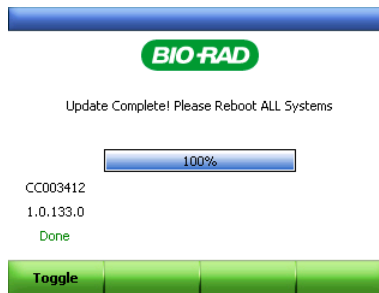


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29) The update process will start. **Do Not** turn off power or remove any devices during this process. This process takes 1 – 2 minutes to complete.



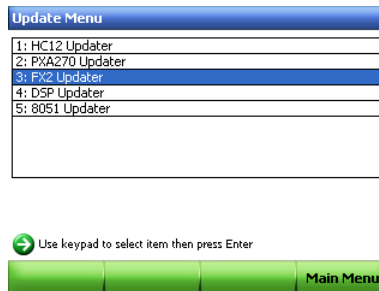
30) When the update has completed the system indicates "Update Complete! Please Reboot ALL Systems." Turn off the instrument, then turn it back on.



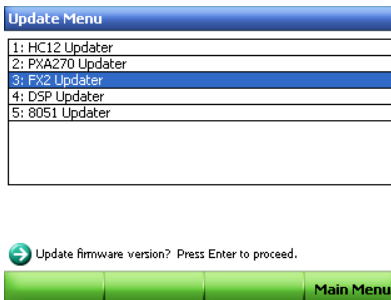
Update C1000 FX2 firmware

31) Repeat steps 11-17 (log in to the thermal cycler as **ADMIN** and return to the **Update Menu**).

32) Highlight **FX2 Updater** and press **Enter**.



33) Press **Enter** again to proceed.



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34) The Update screen appears with the currently installed version displayed.



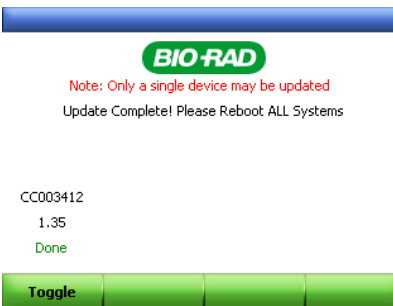
35) When ready, press **Enter**. The system scans the thumb drive for the necessary file (FX2_SAT_BULD.DLD). The message "Please press ENTER to begin update" is presented. Press **Enter**.



36) The update process will start. **Do Not** turn off power or remove any devices during this process. This process takes 1 – 2 minutes to complete.



37) When the update has completed the system indicates "Update Complete! Please Reboot ALL Systems." Turn off the instrument, then turn it back on.



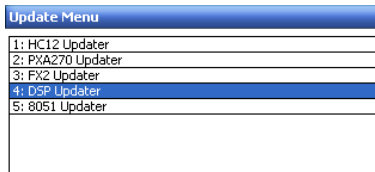
Update CFX DSP firmware

38) Repeat steps 11-17 (log in to the thermal cycler as **ADMIN** and return to the **Update Menu**).

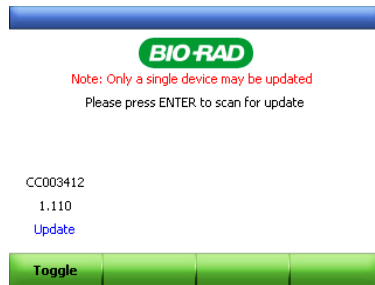
39) Highlight **DSP Updater** and press **Enter**.



40) Press **Enter** again to proceed.



41) The Update screen appears with the currently installed version displayed.

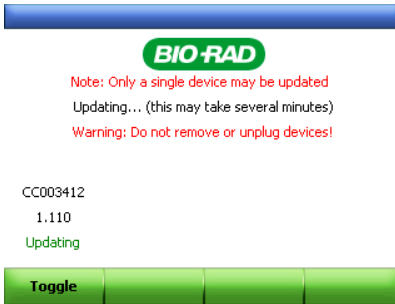


42) When ready, press **Enter**. The system scans the thumb drive for the necessary file (OPTHEADLP1.DLD). The message "Please press ENTER to begin update" is presented. Press **Enter**.

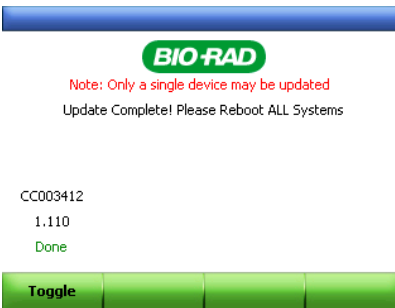


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- 43) The update process will start. **Do Not** turn off power or remove any devices during this process. This process takes 1 – 2 minutes to complete.

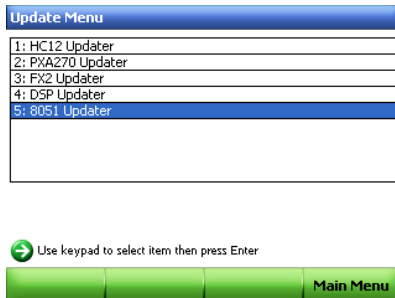


- 44) When the update has completed the system indicates "Update Complete! Please Reboot ALL Systems." Turn off the instrument, then turn it back on.

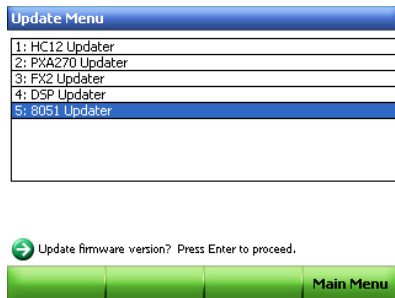


Update CFX 8051 Smartlid firmware

- 45) Repeat steps 11-17 (log in to the thermal cycler as **ADMIN** and return to the **Update Menu**).
- 46) Highlight **8051 Updater** and press **Enter**.

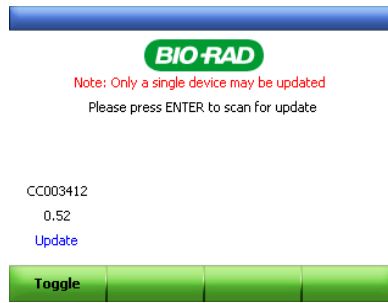


- 47) Press **Enter** again to proceed.

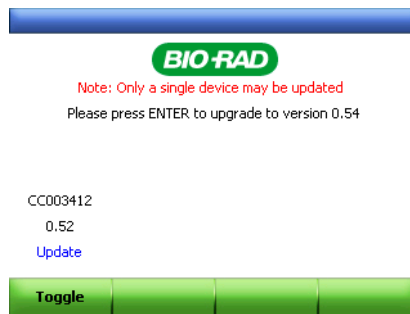


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48) The Update screen appears with the currently installed version displayed.



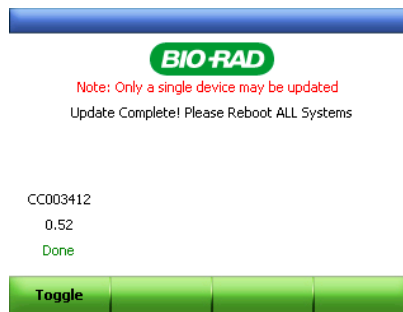
49) When ready, press **Enter**. The system scans the thumb drive for the necessary file (SLIDMAIN.DLD). The message "Please press ENTER to begin update" will be presented. Press **Enter**.



50) The update process will start. **Do Not** turn off power or remove any devices during this process. This process takes 1 – 2 minutes to complete.

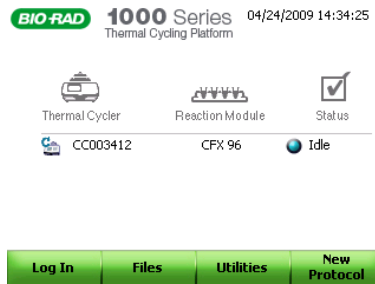


51) When the update has completed the system indicates "Update Complete! Please Reboot ALL Systems." Turn off the instrument, then turn it back on.

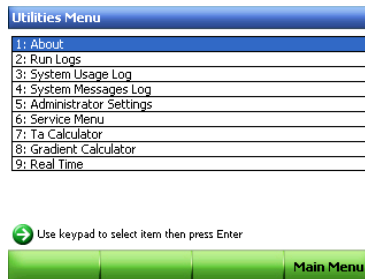


Verify the Update has Completed Successfully

52) From the main menu screen, press the **Utilities** button (F3).



53) Highlight **About** and press **Enter**.



54) Verify that the firmware version is correct, as shown in table below.

PXA270 processor firmware	3.0.59.1016
HC12	1.0.150.0
FX2	1.35
8051	0.54
DSP	1.123