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# **Bio-Plex Manager 4.1** Software

## Upgrade Instructions

For workstations with 3.0 or 4.0 software

For technical service, call your local Bio-Rad office, or  
in the US, call 1-800-4BIORAD (1-800-424-6723)



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# Section 1

## Introduction

These instructions are part of a kit specifically developed to upgrade workstations that currently have Bio-Plex Manager™ 3.0 or 4.0 software (Standard and Security editions) to Bio-Plex Manager version 4.1 software. Details are provided for installing Bio-Plex Manager 4.1 software and upgrading the firmware located on each of the Bio-Plex array reader, microplate platform, and HTF. These instructions should be followed precisely as written. Once the workstation software has been upgraded to Bio-Plex Manager 4.1, it will not be possible to operate earlier versions of Bio-Plex Manager without downgrading the firmware.

Note that two new cables have been included with this update kit; a USB cable for the connection between the array reader and the PC, and a second cable for a new connection between the array reader and the HTF. Do not install these cables until instructed to do so.

New features for Bio-Plex Manager 4.1 include automatic port detection, ability to cancel any fluidic operation, sample timeout, choice of bead maps, control of the filling function of the HTF, and compatibility with hyperthreading (a feature found on newer computers with processor speeds  $\geq$  3GHz). It is now possible to install and use Bio-Plex Manager 4.1 software and IS 2.3 software on the same workstation.

If any problems are encountered, contact Bio-Rad Technical Support at 1-800-4BIORAD (1-800-424-6723).

## Section 2 Upgrade Requirements

### Instrumentation

Identify the serial numbers of each of the array reader, microplate platform, and HTF in order to determine whether they meet the minimum upgrade requirements. Serial numbers can be interpreted as follows:

#### LX100 01 342 009

**LX100** – Denotes the type of system

**LX100** corresponds to the array reader (or analyzer)

**LXY** corresponds to the microplate platform (or XY platform)

**LXSD** corresponds to the HTF (or sheath delivery system)

**01** – Refers to the year of manufacture (in this case 2001)

**342** – Refers to the day of manufacture (in this case, the 342nd day of the year)

**009** – Refers to the instrument built that day (in this case, the 9th instrument built that day)

Refer to the following chart to determine whether the software on the current system can be successfully upgraded to Bio-Plex Manager 4.1 software.

Component	Minimum Requirements (Serial Number)
Array Reader	Array readers manufactured on or after October 1st (day 274) in the year 2000. For array readers manufactured prior to this date, contact your local Bio-Rad sales representative.
Microplate Platform (or XY Platform)	Microplate platforms manufactured on or after January 1st (day 001) in the year 2002. For microplate platforms manufactured prior to this date, contact your local Bio-Rad sales representative.
HTF (or SDS)	All upgradeable.

### Materials Provided

The following items are provided with the selected upgrade kit.

Catalog #	Description
171SUPG30	<b>Bio-Plex Manager 4.1 Standard Software for 3.0 Workstation</b> , includes workstation license, validation kit 4.0, MCV plate III, and communication cables to upgrade Bio-Plex Manager 3.0 workstation
171SUPG40	<b>Bio-Plex Manager 4.1 Software for 4.0 Workstation</b> , includes communication cables to upgrade Bio-Plex Manager 4.0 Standard or Security workstation.
171STND23	<b>Bio-Plex Manager 4.1 Standard Software for IS 2.3 System</b> , includes workstation license, validation kit 4.0, MCV plate III, calibration kit, communication cables and calibration reminder sticker for systems with IS 2.3 software

## Section 3

# Software Installation

Prior to proceeding with the software installation, ensure that the minimum upgrade requirements for the array reader, microplate platform and HTF have been met (refer to Section 2 – Upgrade Requirements).

It is important to follow the installation instructions precisely as written. If problems are encountered during the installation procedure contact Bio-Rad Technical Support at 1-800-4BIORAD (1-800-424-6723).

### Uninstall Current Bio-Plex Manager Software and LXR Library

Note that removal of the Bio-Plex Manager 3.0 or 4.0 software is not required for successful operation of Bio-Plex Manager 4.1, but it is highly recommended.

1. Ensure that the computer, array reader, microplate platform and HTF are powered off.
2. Remove the software license key (hardware protection key) from the computer, then power on the computer and log on as an Administrator.
3. For computers with Windows XP, select **Start | Control Panel** (for Windows 2000, select **Start | Setting | Control Panel**).
4. Select **Add or Remove** (or **Add/Remove**) to populate a list of currently installed programs. Select **Bio-Plex Manager** (or **Bio-Plex Manager 4.0**) from the applications listed.
5. Select **Remove** and answer **Yes** to the question “Are you sure you want to remove Bio-Plex Manager (or Bio-Plex Manager 4.0) from your computer?”. It will take less than a minute to uninstall Bio-Plex Manager software.
6. Highlight the listing for LXR Library and uninstall it by selecting **Remove**. If the InstallShield Wizard window is displayed, select **Remove** and **Next**. Click **OK** to the question “Do you want to completely remove the selected application and all of its components?”

7. If the Shared File Detected window opens select the box to not display the message again and click **Yes**. Select **Finish** when you see Maintenance Complete and exit to the desktop.

### Install Bio-Plex Manager 4.1 Software

1. Insert the Bio-Plex Manager 4.1 software disk into the CD drive. The installation will start automatically.
2. Select **Install Bio-Plex Manager**. The Wise Installation Wizard will start and the Windows Installer will open.
3. When the Welcome to the Bio-Plex Manager 4.1 Installation Wizard window appears, click **Next**.
4. Read the Readme Information screen and reinsert the software license key (hardware protection key) onto the computer. Those with Bio-Plex Manager 3.0 should use the new key provided with the upgrade kit.
5. Enter Name and Organization if desired and select **Next**.
6. To accept the default Destination Folder (recommended) select **Next**.
7. To accept the default Database Destination Folder (recommended) select **Next**.
8. When queried for the installation type, select **Typical** then **Next**.
9. When notified that the installer is Ready to Install the Application, select **Next** to begin installation. If a Bio-Plex Manager window opens noting that the database installation directory already contains a database file, select **Yes** to replace the existing file.
10. When prompted that Bio-Plex Manager has been successfully installed, select **Finish**. The software installation is complete.

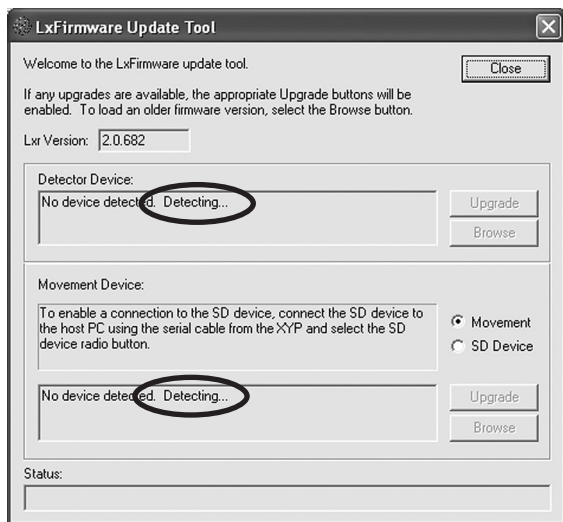
# Section 4

## Firmware Upgrade

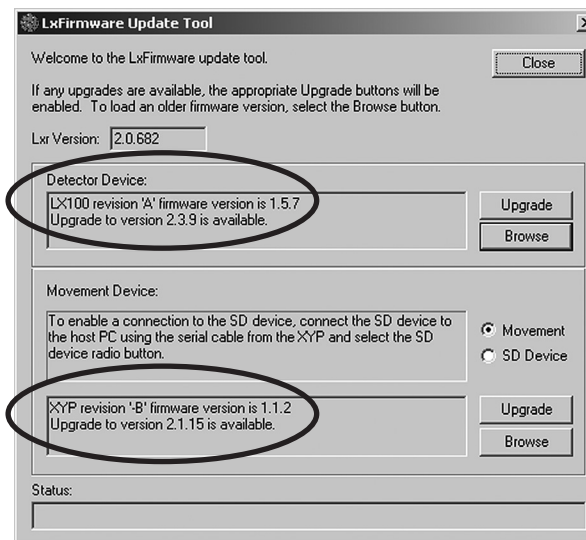
### Upgrade Array Reader Firmware

Note that it will not be possible to operate earlier versions of Bio-Plex Manager software once the firmware is upgraded.

1. Power on the array reader (LX100 analyzer) and microplate platform (XY platform). The HTF (sheath delivery system) should remain powered off.
2. Select **Start | All Programs | Luminex | LXR | LX Firmware**. The LxFirmware Update Tool screen will open as follows:



3. Both the Detector Device box (for the array reader) and the Movement Device box (for the microplate platform) will show that the program is detecting the devices (the Movement Device for the HTF/SD Device will be addressed later). It may take up to 3 minutes for both devices to be detected and the screen will appear as shown (some variations of the firmware versions may be observed):

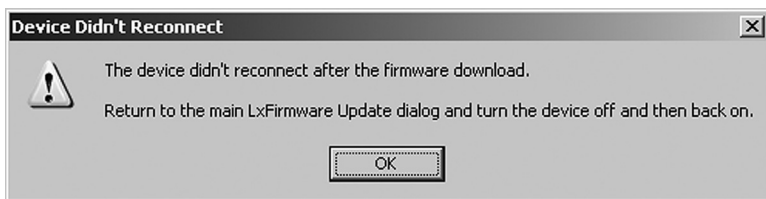


NOTE: If the LxFirmware Update Tool does not detect both devices after 3 minutes, turn the devices off and on. If the devices are still not detected, confirm that the cables are firmly connected to each device, reboot the computer and repeat steps 2 and 3. If the devices are still not detected, contact Bio-Rad Technical Support.

4. Record the current firmware versions for the Detector Device \_\_\_\_\_ and the Movement Device \_\_\_\_\_. The current firmware versions may vary, however, the upgrade version for the Detector Device and Movement Device should always be 2.3.9 and 2.1.15, respectively.

- If the message in the Detector Device box states that the LX100 firmware version is already 2.3.9, skip to page 8 (Upgrade Microplate Platform Firmware). However, if the LX100 firmware version is not 2.3.9 and the message indicates that the upgrade to version 2.3.9 is available, select **Upgrade** and then **Yes** to download version 2.3.9 firmware to the array reader. It may take a few minutes to download the firmware and initialize the instrument. Select **OK** when the download is complete. The Detector Device box should now indicate that the LX100 firmware version is 2.3.9.

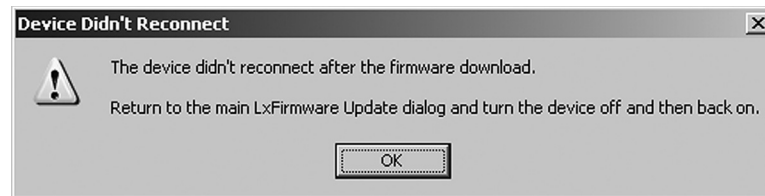
NOTE: The following message may appear if the array reader is not able to reconnect once the firmware has been downloaded. Follow the instructions in the dialog box to reconnect the array reader.



### Upgrade Microplate Platform Firmware

- If the message in the Movement Device box states that the XYP firmware version is already 2.1.15, skip to step 2. However, if the XYP firmware version is not 2.1.15 and the message indicates that the upgrade to version 2.1.15 is available, select **Upgrade** and then **Yes** to download version 2.1.15 firmware to the microplate platform. It may take a few minutes to download the firmware and initialize the instrument. Select **OK** when the download is complete. The Movement Device box should now indicate that the XYP firmware version is 2.1.15.

NOTE: The following message may appear if the microplate platform is not able to reconnect once the firmware has been downloaded. Follow the instructions in the dialog box to reconnect the microplate platform.



- Close the LxFirmware Update Tool. Power off the array reader and microplate platform prior to proceeding.
- Replace the serial cable that currently connects the array reader to the computer with the new communication cable provided (Catalog # 171-002003). Connect the USB end to the computer and the serial end to the array reader (port P1). Then use the serial cable to connect the microplate platform to COM 1 on the computer (refer to the cable connection diagram in the Appendix).
- Power on the array reader and microplate platform. Restart the LxFirmware Update Tool by going to **Start | All Programs | Luminex | LXR | LX Firmware**. Confirm that the current firmware versions are 2.3.9 for the Detector Device and 2.1.15 for the Movement Device.

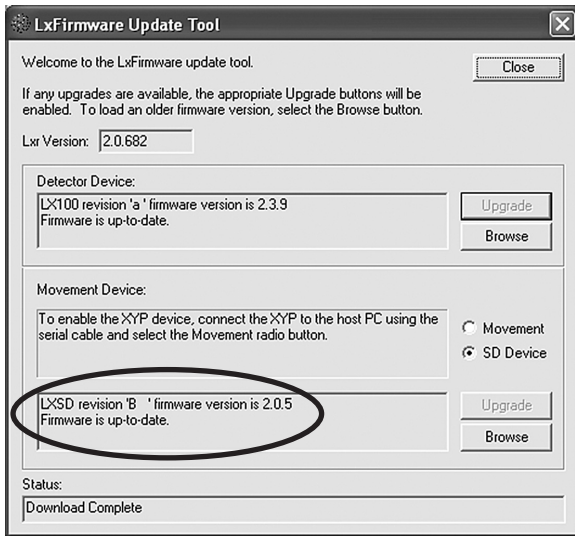
NOTE: If the LxFirmware Update Tool does not detect both devices after 3 minutes, turn the devices off and on. If the devices are still not detected, confirm that the cables are firmly connected to each device, reboot the computer and repeat steps 2 and 3 (Upgrade Array Reader Firmware). If the devices are still not detected, contact Bio-Rad Technical Support.

### Upgrade HTF Firmware

If the system includes an HTF (sheath delivery device), continue following these instructions. If the system does not include an HTF, the firmware upgrade is complete (skip to Reset Instrument Pressure Settings in Section 5).

- Disconnect the serial cable from the back of the microplate platform and connect it to the HTF. The HTF should now be connected to the computer. Power on the HTF.

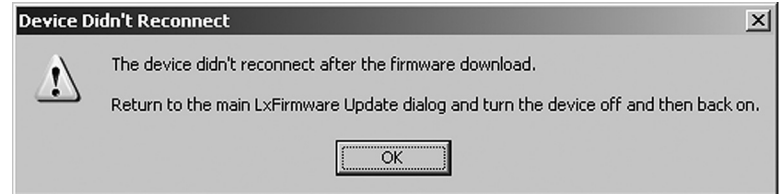
- In the LxFirmware Update Tool screen, select the SD Device option next to the Movement Device box. It will take a few minutes for the device to be detected and the screen will appear as follows (some variations of the firmware versions may be observed).



- Record the current firmware version for the SD Device \_\_\_\_\_. The current firmware version may vary, but the upgrade version for the LXSD Movement Device should always be 2.0.5.
- If the message in the Movement Device box states that the LXSD firmware version is already 2.0.5, skip to step 7. However, if the LXSD firmware version is not 2.0.5 and the message indicates that the upgrade to version 2.0.5 is available, select **Upgrade** and then **Yes** to download version 2.0.5 firmware to the HTF. Select **OK** when the download is complete. The Movement Device box should now indicate that the LXSD firmware version is 2.0.5.

NOTE: The following message may appear if the HTF is not able to reconnect once the firmware has been downloaded. Follow the instructions in the dialog box to reconnect the HTF.

- Close the LxFirmware Update Tool. Power off the HTF prior to proceeding.



- Power on the HTF. Restart the LxFirmware Update Tool by selecting **Start | All Programs | Luminex | LXR | LX Firmware**. Select the SD Device option next to the Movement Device box. Confirm that the current firmware version is 2.0.5 for the LXSD Movement Device.
- Close the LxFirmware Update Tool and remove the serial cable from the HTF and reconnect it to the microplate platform.
- Connect the second new communication cable provided (Catalog #171-002002) to the array reader (port P2) and the HTF (port P1). Refer to the cable connection diagram in the Appendix. The firmware upgrade is complete.



# Section 5

## Pressure Setting Adjustment

### Verify HTF Pressure Settings

1. Launch Bio-Plex Manager 4.1 software. From the menu bar, select **Instrument | Additional Functions | Prime**. Select **OK** to begin priming the array reader and HTF.
2. Once priming begins, select **Instrument** and open the Instrument Information window. Monitor the sheath pressure value and record the sheath pressure \_\_\_\_\_ once it has stabilized. It may be necessary to repeat the prime function a few times.

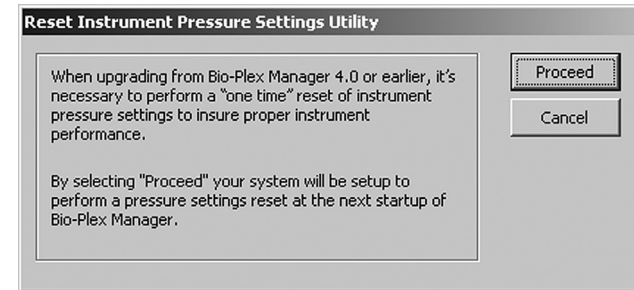
NOTE: If priming does not begin because the system is continually in Pressurizing status, it will be necessary to reset the instrument pressure settings as described on the next page.

3. Open the door on the front of the reader just to the left of the sample probe.
4. Find the regulator screw which is located about 1.5 inches to the left, and just below, the sample syringe. This screw needs to be turned fully clockwise, but be careful to first determine if it is already turned fully clockwise. To do so, first turn the screw one full turn in the counter-clockwise direction to develop a feel for the amount of force required to turn the screw. Now begin turning clockwise and keep going until you first feel additional resistance (this may require many full turns of the screw if the screw was not already fully clockwise). Do not force it beyond initial resistance.
5. Close the front door and run another prime and note if the sheath pressure is elevated above what was noted in step 2.
6. If the sheath pressure is elevated, find the regulator screw on the front of the HTF. It is labeled Regulator and is immediately below the Prime button. Again while priming, and the pressure stable, adjust the pressure with this screw until it is the same as noted in step 2. Turning the screw counter clockwise lowers the pressure. Continue running prime until the pressure is correctly set.

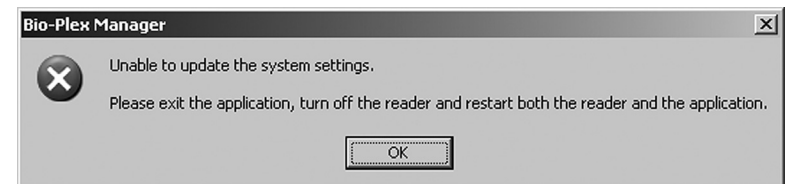
7. Run prime once more to verify the pressure is set correctly by observing that it stabilizes at the correct pressure ( $\pm 0.2$  psi).

### Reset Instrument Pressure Settings

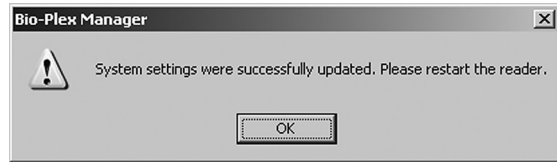
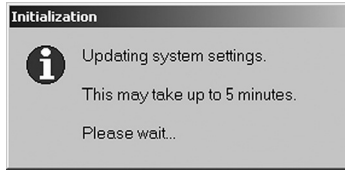
1. Close the Bio-Plex Manager 4.1 software application. Select **Start | All Programs | Bio-Plex Manager 4.1 | Utilities**.
2. Select **Reset Instrument Pressure Settings**. The following dialog box will appear:



3. Select **Proceed**. Select **OK** once the Setup Completed Successfully message appears.
4. Power off the array reader, then power it back on.
5. Launch the Bio-Plex Manager 4.1 software application. If the system is already warmed up, the following dialog box will appear:



- Exit the application and power off the array reader. Then power on the array reader and restart the Bio-Plex Manager 4.1 software application. The following two dialog boxes will appear:



- To restart the array reader, first exit from Bio-Plex Manager. Cycle the power on the array reader and re-launch Bio-Plex Manager. Congratulations—the workstation upgrade is complete!

NOTE: If the system settings were not set properly, follow the instructions on any error message that appears. If further problems are encountered, contact Bio-Rad Technical Support at 1-800-4BIORAD (1-800-424-6723).

## Appendix Cable Connection Diagram

