

HOWTO: UPDATE XO 4 FIRMWARE

1. OVERVIEW

This document describes how to perform a firmware upgrade of an XO 4 unit using the XO 4 Toolbox version 2. It is advised that the technician read this before performing the update.

1.1 PREREQUISITES

The following is a list of the prerequisites needed to carry out a firmware update:

- PC with a COM port running Microsoft Windows 7 or XP
- RS232 modem cable with 9-pin Sub-D male and 9-pin female Sub-D connectors (the one delivered together with the Firmware Updater, AN-900 cannot be used)
- XO 4 unit with firmware version 1.60 or later
- The XO 4 Toolbox 2 installation package (available from www.xo-care.com)
- An XO 4 firmware upgrade dongle and null modem cable (optional)

2.0 GENERAL PROCEDURE

The firmware can be updated using either a PC or a dongle. When using a dongle it is not necessary to bring a PC to the installation site.

IMPORTANT

Before attempting to update a unit in the field it is strongly recommended that you try out the procedure in a "safe" environment in order to familiarize yourself with the procedure and to make sure that everything works properly.

Instructions for updating XO 4 firmware using a PC:

1. Install the latest version of the XO 4 toolbox 2 on a PC with a serial port (Section 3)
2. Backup the user data of the unit to a file on the PC (Section 4.1).
3. Upload the new firmware version to the unit (Section 5.1).
4. Restore the user data to the unit using the backup file (Section 4.2).

Instructions for updating XO 4 firmware using a dongle:

1. Install the latest version of the XO 4 Toolbox 2 on a PC with a serial port (Section 3).
2. Update the dongle with the new firmware version using the toolbox (Section 5.2).

3. Use the dongle to upload the new firmware version to the unit.

2.1. IMPORTANT NOTES ON UPDATING XO 4 FIRMWARE

- When updating XO 4 firmware, all dentist and technician settings will be reset. Therefore these data should be preserved before the update and restored after. Otherwise the technician must adjust all settings after the update.
- When unit is started with all instrument types set to NONE, the instrument types will be automatically detected the next time the unit is powered-up. This detection will also reset spray and speed level selection.
- It is mandatory that a chair calibration is executed after the update (See section 7).
- Spray and speed level selection on the instruments will not be preserved during the update.
- After the firmware update has finished, the unit update slaves, if this is necessary. Note that updating slaves always requires unit to be powered off first. Therefore the first slave update attempt after the firmware update will fail (as power has not been off).
- Updating a XO 4-2 unit from a version prior to version 2.00 to version 2.00 or later, a code block is required on the main board (AD-603). If you do not have a code block in the unit, DO NOT UPDATE THE UNIT!!

3.0 PREPARATION

3.1 TOOLBOX INSTALLATION

Follow these instructions to install the XO 4 Toolbox version 2:

1. Download the XO 4 Toolbox 2 from the distributor extranet at www.xo-care.com
2. Double click on the downloaded file to start the installation.
3. Follow the instructions on screen.

Please note that administrator privileges are needed to install new software on some machines. If you do not have the necessary rights to perform the installation please refer to your local IT administrator for assistance.

The XO 4 Toolbox 2 requires that the Microsoft .NET 4.0 runtime is installed on the PC. If this is not the case the installer will automatically install it before proceeding with the installation of the toolbox itself.

4.0 USER DATA BACKUP & RESTORATION

The save and load user data tools of the toolbox are used to backup and restore unit user data. When updating the firmware of an XO 4 unit the unit configuration will be deleted. Before uploading a new firmware version it is recommended that a backup of the existing configuration is made. When the new firmware has been uploaded the old configuration can be restored using the backup.

4.1 INSTRUCTIONS FOR SAVING USER DATA TO FILE

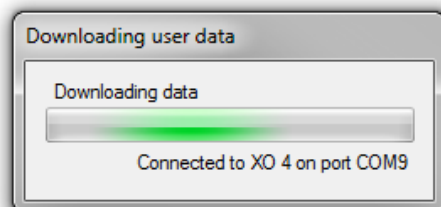
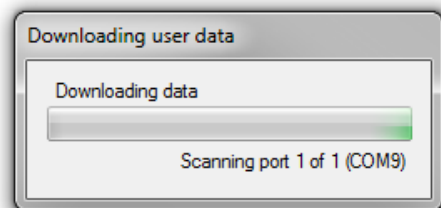
To backup the user data (configuration) of an XO 4 unit follow these instructions:

1. Connect the unit to a PC using a RS-232 serial cable.
Make sure the PC has the XO 4 Toolbox 2 software installed.
2. Power on the unit
3. Start the XO 4 Toolbox 2 program:
Start → All programs → XO CARE → XO 4 Toolbox 2 → XO 4 Toolbox 2
4. Click on the *Save user data* button

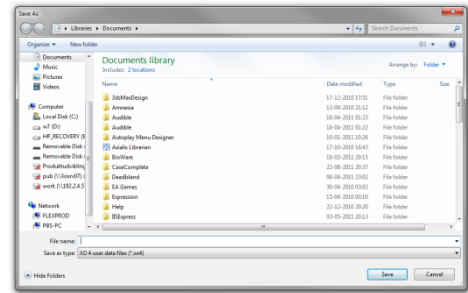


5. The toolbox will scan the serial ports of the PC in order to detect the connected XO 4 unit. When the correct port has been detected the connection is established (automatically) and the user configuration downloaded.

If the toolbox fails to detect a connected XO 4 unit an error message will be shown. Please refer to section 6.0 for advice.



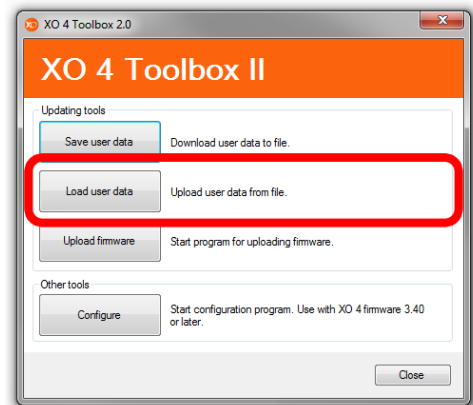
- When the user data has been downloaded you will be prompted with a save file dialog window. Enter the name of the file and click Save. This completes the procedure.



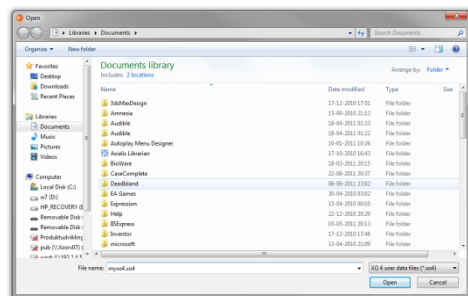
4.2 INSTRUCTIONS FOR RESTORING USER DATA FROM FILE

To load user data from a file to an XO 4 unit follow these instructions:

- Connect the unit to a PC using a RS-232 serial cable.
Make sure the PC has the XO 4 Toolbox 2 software installed.
- Power on the unit
- Start the XO 4 Toolbox 2 program:
Start → All programs → XO CARE → XO 4 Toolbox 2 → XO 4 Toolbox 2
- Click on the *Load user data* button

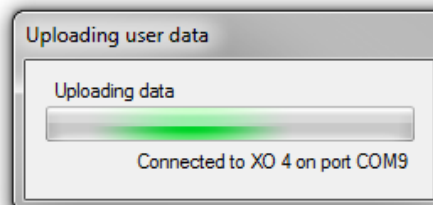
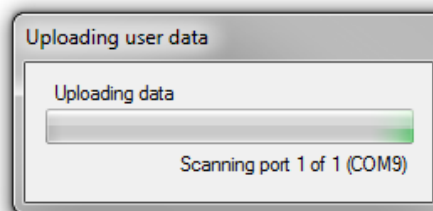


- Choose the file containing the user data that you want to upload to the unit.



6. The toolbox will scan the serial ports of the PC in order to detect the connected XO 4 unit. When the correct port has been detected the connection is established (automatically) and the user configuration transferred to the unit.

If the toolbox fails to detect a connected XO 4 unit an error message will be shown. Please refer to section 6.0 for advice.



7. If the transfer was successful a tune will be played on the unit.

It may not be possible to load user data saved from a unit with a newer firmware version onto a unit with an older firmware version. That is, loading version 1.54 user data onto unit with version 1.53 is not possible. The display will indicate if the update has succeeded (SUCCESS or FAIL).

5.0 XO 4 FIRMWARE UPDATE TOOL

IMPORTANT

Note that when updating a XO 4-2 unit from firmware version 1.60 or lower to firmware version 2.00 or higher, the unit shall be equipped with a code block. Previously only XO 4-6 units were equipped with code block, but XO-CARE policy is that all units shall have one. Contact XO-CARE service personnel for information on how to obtain code blocks for XO 4-2 units. If a unit without code block have inadvertently been updated, it will display CODE BLOCK REQUIRED CALL SERVICE in the display and it will be inoperative. In this case either install the code block on the AD-603 PCB in the instrument bridge or downgrade the unit to version 1.60 to install code block at a later time.

IMPORTANT

Note that updating the unit firmware will also erase the unit settings, both dentist and technician setting. To preserve the settings, use the load user data tool prior the firmware update and use the save user data tool after the firmware update.

IMPORTANT

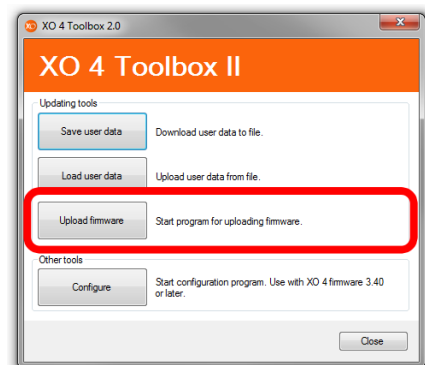
If the unit is equipped with an XO Odontosurge module then it must be disconnected before starting the firmware upload. If this is not done then the bridge PCB may be permanently damaged during the update.

5.1 INSTRUCTIONS FOR UPDATING UNIT FIRMWARE FROM A PC:

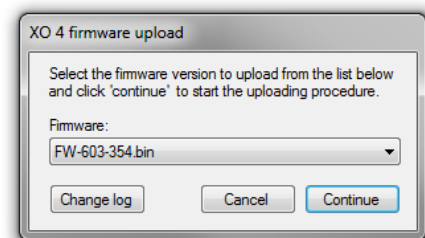
1. Switch off the unit.
2. Connect the XO 4 unit and the PC with a RS-232 serial cable.
3. Press and hold the *C-button* of the unit while powering it on. The *C-button* is found at the bottom of the instrument bridge.



4. Release the *C-button*
(XO 4 wakes up without light in the display and no start-up jingle).
5. Start the firmware upload tool by clicking the *Upload firmware* button from the main windows of the XO 4 Toolbox.



6. In the dialog box appearing select the firmware version and click *Continue*.



7. The toolbox will scan the serial ports of the PC in order to detect the connected XO 4 unit.

If the toolbox fails to detect a connected XO

4 unit an error message will be shown.
Please refer to section 6.0 for advice.

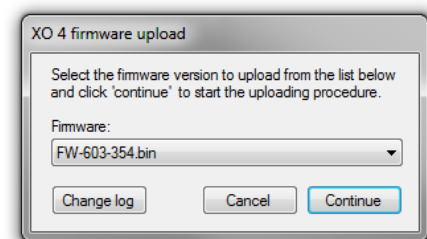
8. When the correct port has been detected the connection is established (automatically) the uploading will begin. The upload will take several seconds.
9. When the upload is complete an "oink" sound will be played on the unit and a message shown on the PC.

5.1 INSTRUCTIONS FOR UPDATING A PROGRAMMING DONGLE:

1. Connect the dongle to a serial port on the PC with a null model cable.
2. Start the firmware upload tool by clicking the *Upload firmware* button from the main windows of the XO 4 Toolbox.



3. Power on the dongle
4. In the dialog box appearing select the firmware version and click *Continue*.



5. The toolbox will scan the serial ports of the PC in order to detect the dongle.

If the toolbox fails to detect the dongle an error message will be shown. Please refer to section 6.0 for advice.

6. When the correct port has been detected the connection is established (automatically) the uploading will begin. The upload will take several seconds.
7. When the upload is complete a message is shown on the PC.

6.0 TROUBLESHOOTING

Toolbox reports "NO PORTS AVAILABLE"

This message is shown if the toolbox was unable to locate any serial ports on the PC. This indicates a problem with the port and/or its driver. If a USB-to-serial adaptor is used try re-connecting it and if this does not work try re-installing the drivers for the adaptor.

Toolbox reports "Communication error"

This message is shown if there was an error communicating with the unit. Check the following:

- Make sure the port and its driver are installed and working properly.
- Make sure the cable works properly.
- Make sure that the serial port is not used by another program on the PC such as XO Smart Link or XO Camera Interface Service.

The unit was updated successfully but reports "CS error" and does not work

This indicates a problem with the PC. Try another PC or use a programming dongle.

7.0 FOOT CONTROL CALIBRATION

When the firmware of a workstation has been updated the foot control should be re-calibrated. Instructions for calibrating a foot control:

1. Power off the unit
2. Place the Foot Control on a plane surface.
3. Press Foot Control Joystick south and hold down Button A and B (if Button A and B are not present, just press Foot Control Joystick south).
4. Turn Unit power on and keep pressing the buttons and joystick for five seconds.
5. The XO4 unit will issue messages in its display. These messages shall be ignored.
6. Release buttons and joystick. Now the LED inside the Foot Control is blinking slowly (you can see the led if you look inside the Foot Control just to the right of the pedal. If the Foot Control is not in calibration mode, the LED is blinking very fast – looks nearly like constant light, and you have to start from step 1).
7. Press pedal to the left most position and press joystick south and release it. Now the LED inside the foot control is blinking a little faster, indicating that the left value is stored.

8. Press pedal to the right most position and press joystick south and release it. Now the LED inside the foot control is blinking even a little faster than before, indicating that the right value is stored.
9. Press pedal down by pressing at the tip of the pedal and press joystick south and release it. (In this step you must press the joystick gentle, to be sure not to tilt the Foot Control, if tilted you have to start from step 1). Now the LED inside the foot control is blinking very fast, indicating that the down value is stored, and the Foot Control has left the calibration mode.
10. The unit is ready for use.