XO SMART LINK HOW-TO´S

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1 XO SMART LINK: INSTALLATION

This how-to explains how to install XO Smart Link 4.0. For instructions on how to install previous versions please see the documentation delivered with the software.

1.1 PREREQUISITES

To install XO Smart Link, you need the following:

- A copy of the XO Smart Link installer. If you do not have a CD with the software, you may download from xo-care.com.
- A valid XO Smart Link license key. To obtain a license key visit the registration website: pos.xo-care.com.
- XO 4-6 unit
- A PC running Windows XP, Windows 7 or Windows 10 (32 or 64 bit)
- A user account with administrative privileges
- An RS-232 (serial) cable
- A USB-to-serial converter (only needed if the PC is not equipped with a serial port)

1.2 PHYSICAL SETUP

Before installing the software, you need to setup the connection between the PC and the unit. This is done by means of an RS-232 (serial) cable. The cable should connect the unit with a serial port in the PC. If the PC does not have a serial port a USB-to-serial converter can be used.

1.3 UPGRADING FROM A PREVIOUS VERSION

If you are upgrading from a previous version, you need to first uninstall the older version of XO Smart Link. Please see the documentation delivered with the installed version of XO Smart Link for instructions on how to do this.

Note: before uninstalling you should make a backup of your user data. For instructions on how to export (backup) user settings see 4 HOW-TO: IMPORT/EXPORT USER DATAHOW-TO: IMPORT/EXPORT USER DATA.

1.4 INSTALLING THE SOFTWARE

To start the installation procedure double click on the installer file. The installer for XO Smart Link 4.0 is named 'xosl40.exe'. This will start the installation procedure. Follow the instructions on screen.

Note: XO Smart Link 4.0 requires the Microsoft .NET framework 4.0 (or later) to be installed on the PC. If this is not already installed the installer will install this for you. During the installation of the Microsoft .NET 4.0 framework it may be necessary to restart the PC. To continue the installation after a restart simply double click the installation file again.

If you are upgrading from an earlier version XO Smart Link 4.0 will automatically try to convert any existing user profiles to the new version. If profiles saved with older versions of the software are detected during start-up, you will be presented with a choice of upgrading the user profile or leave the profile. Make sure you choose to automatically update all profiles. If you do not want to use the old profiles, then it is

necessary to manually delete them from the disk. The profiles are located in the folder 'C:\ProgramData\XO POS' on most systems.

2 HOW-TO: UNINSTALL SMART LINK

Step 1: Save all custom plug-ins, user profiles etc for future use. See section 4 and 5 for further info.
Step 2: Remove Smart Link in: ControlPanel > Programs and Features
Step 3: Remove all files from these locations:

c:\Program Files (x86)\XO CARE\
c:\ProgramData\XO POS\

Step 4: Remove all Xo.Pos.Services.* entries under:
c:\Windows\assembly\GAC
c:\Windows\assembly\GAC_32
c:\Windows\assembly\GAC_64
c:\Windows\assembly\GAC_MSIL

Step 5: Search in C: \ for “POS”, “xo care”, “smart link”, “SL” and delete if any files come up to be sure every file connected to smart link is removed.

3 HOW-TO: CHECK THE VERSION NUMBER

To check what version of XO Smart Link is installed you need to first start XO Smart Link. When started the version number can be seen in the XO bar next to the XO button.

4 HOW-TO: IMPORT/EXPORT USER DATA

User data from an installation of XO Smart Link can be exported to a file. The file can be used to import the user data to an updated version of XO Smart Link on the same machine or to copy the user data to another installation on another machine.

4.1 EXPORT USER DATA TO FILE

First open XO Smart Link. Open the 'User management' window by clicking XO button -> Users -> Manage users. The user management window contains a list of all users and a list of buttons. Click on the user whose data you would like to export and then on the 'Export' button. A save-to-file dialog will be shown. Navigate to the location where you want the user data to be saved and enter a name for the file. Click 'Save' to complete the export.

4.2 IMPORT USER DATA FROM FILE

First open XO Smart Link. Open the 'User management' window by clicking XO button -> Users -> Manage users. The user management window contains a list of all users and a list of buttons. Click on the button 'Import'. An open-from-file dialog will be shown. Navigate to the location where the user data file is located and select it. Click 'Open' to import the user data.

5 HOW-TO: IMPORT/EXPORT PROGRAMS AND TREATMENTS

A new feature in XO Smart Link 4.0 is the ability to import and export individual instrument programs and treatments. This enables sharing of specific programs and treatments between users.

To export an instrument program or treatment to a file first pull forward the unit instrument for which the program or treatment is defined. Right click the icon on XO bar and then click 'Export' in the menu that appears. This should show the save file dialog.

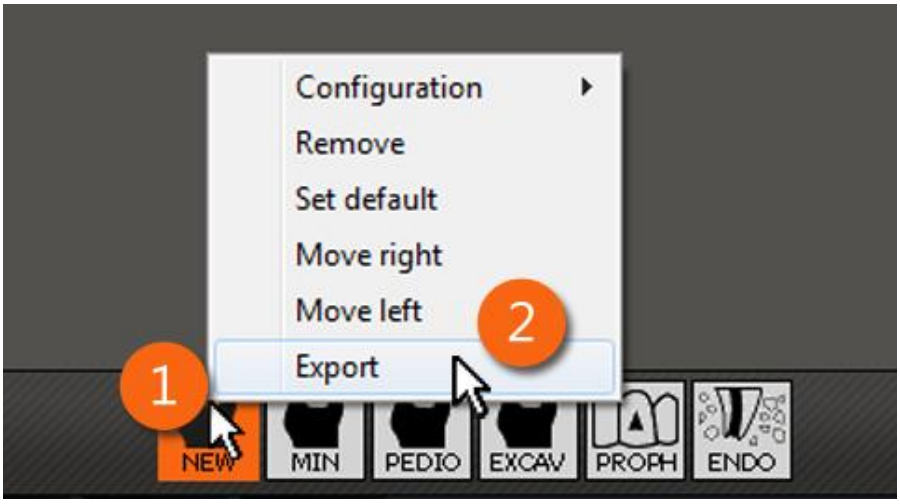


Figure 1. Export: 1) right click the program or treatment. 2) click 'Export'

To import an instrument program or a treatment from a file first right click on the XO bar. In the menu that appears click the 'Add plugin' option to open the add plugin window. In this window click the 'Load from file' button located at the bottom left.

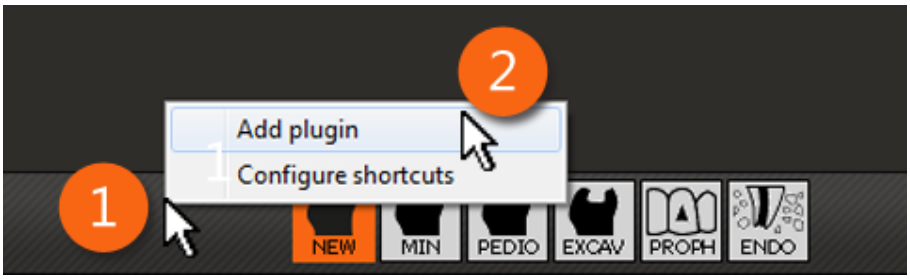


Figure 2. Import: pull forward the unit instrument, right click the XO bar (1) then click 'Add plugin' (2) to show the add plug-in dialog.

6 HOW-TO: SETUP DÜRR DBSWIN INTEGRATION

Dürr DBSWIN is an imaging program from Dürr Dental that can be used to capture images from intraoral cameras and x-ray devices. The program can be integrated with XO Smart Link through one of two plug-ins.

When properly integrated with XO Smart Link the foot control and/or the joystick of XO 4 can be used to issue commands to the program in a hands-free fashion.

To setup the integration you need to find out if you have a 32- or 64-bit operating system. You also need to know the version of Dürr DBSWIN. The version number can be seen when the program loads or on the installation CD.

6.1 DÜRR DBSWIN 5.1 (ALL OPERATING SYSTEMS)

First you need to install Dürr DBSWIN and make sure it works properly with the camera.

Step 1: Open XO Smart Link and connect to the unit.

Step 2: Pull forward the camera. The content of the XO bar should change.

Figure 3. Content of the XO bar when the camera is pulled forward

Step 3: Right click on the XO bar to show the context menu. Click on 'add plug-in'. A new window will open.

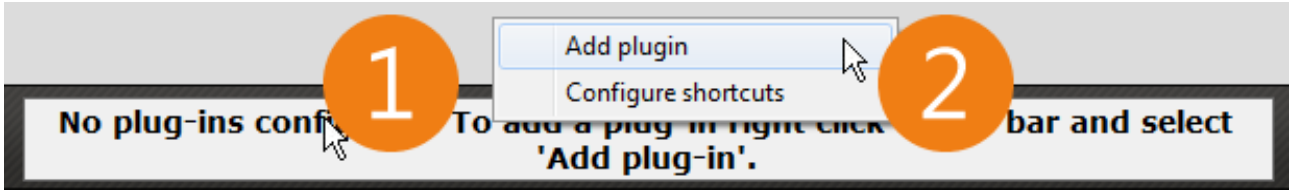


Figure 4. Add-plug: 1) right click on XO bar 2) click 'add-plug-in'

Step 4: Select the plug-in 'Dürr DBSWIN' and click 'OK'. The icon of the Dürr DBSWIN should now appear on the XO bar.

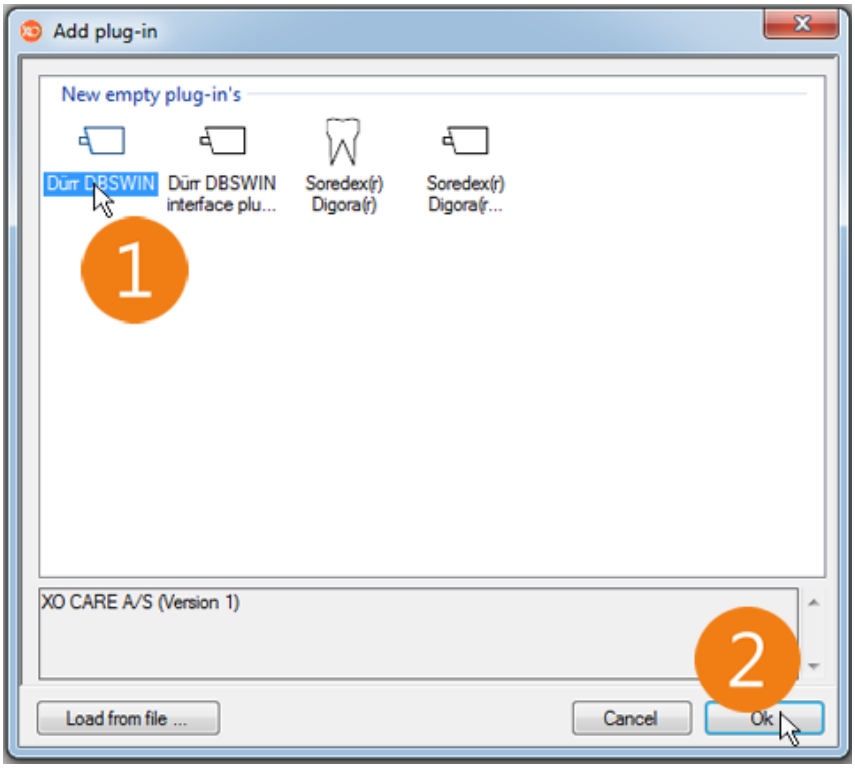


Figure 5. Choose plug-in: 1) click on 'Dürr DBSWIN' 2) Click 'Ok'

Note: make sure you do not mistakenly select the similarly named plug-in 'Dürr DBSWIN Service Interface'.

Step 5: This completes the integration of Dürr DBSWIN and XO Smart Link. To save the change click on the Save all settings button (XO bar -> Configuration -> Save all settings).

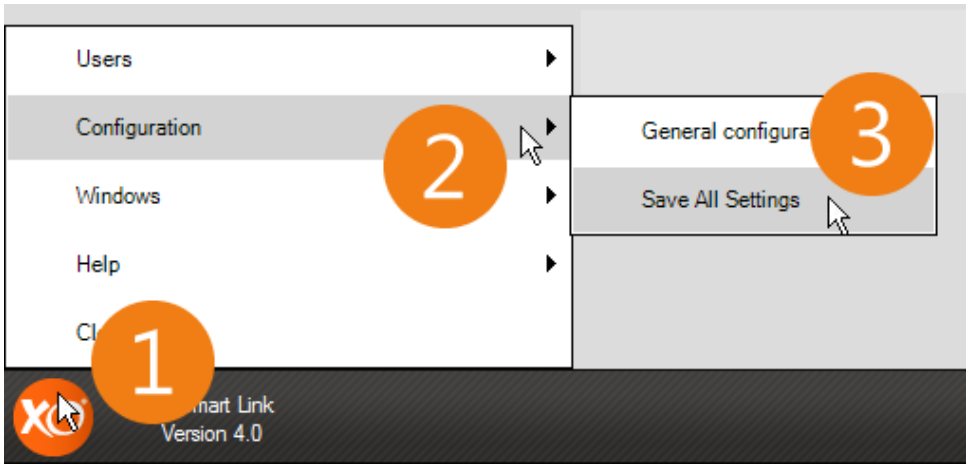


Figure 6. Save changes: Click XO Logo -> 'Configuration' -> 'Save all settings'

To test the integration, select a patient in Dürr DBSWIN and open the video tab. Use the foot control to issue a freeze command to the program.

6.2 EARLIER VERSIONS OF DÜRR DBSWIN (32-BIT OPERATING SYSTEMS)

Note: Although XO Smart Link can be integrated with earlier versions of Dürr DBSWIN it is strongly recommended that you upgrade to version 5.1.

Before you proceed you need to make sure Dürr DBSWIN is installed and works properly with the camera.

Step 1: Download and install the 'Dürr DBSWIN Service Interface' software.

Step 2: Follow the instructions in this document.

6.3 EARLIER VERSIONS OF DÜRR DBSWIN (64-BIT OPERATING SYSTEMS)

Unfortunately, it is not possible to integrate earlier versions of Dürr DBSWIN with XO Smart Link on a PC with a 64-bit operating system. The reason for this is that the software used to create the integration contains a driver that only works with 32-bit operating systems. To resolve this problem, you need to either upgrade Dürr DBSWIN or install a 32-bit operating system.

7 HOW-TO: SETUP AND USE AUTO RE-CONNECT

The auto re-connect feature can be used to avoid having to restart XO Smart Link if the connection between the workstation and the PC is lost. When enabled, XO Smart Link will automatically attempt to re-connect to the workstation in case the connection is lost. Auto re-connect is not enabled by default.

7.1 ENABLING AUTO RE-CONNECT

To enable auto reconnect open the general configuration window (XO button -> Configuration -> General configuration). In the general configuration window open the "Misc." tab. Check the box labelled "Automatically attempt to reconnect if connection is lost". Click 'Ok' to save the changes.

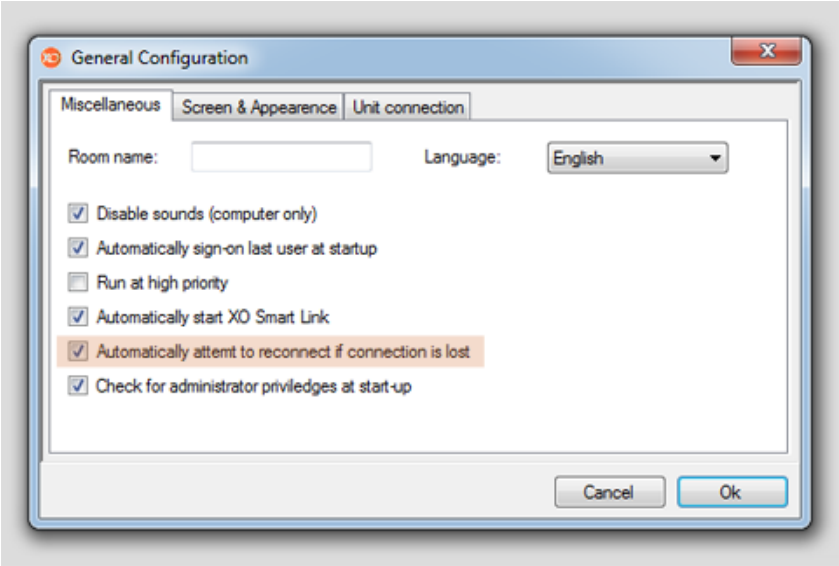


Figure 7. Using auto re-connect

In order to re-connect it is necessary for XO Smart Link to transfer the instrument programs to the workstation. For safety reasons this can only be done when all instruments are resting. If an instrument is in use when XO Smart Link re-establishes the connection the instrument programs will not be transferred immediately. Instead a message will be shown on the XO bar requesting that all instruments should be laid back for the connection to be fully re-established.

Note: When XO Smart Link re-connects after a connection lost the state of the workstation (i.e. program selection) is reset.

8 HOW-TO: SETUP NAVIGATION

8.1 PROGRAM/PLUG-IN ACTIVATION/DEACTIVATION

Programs and plug-ins are (by default) activated and deactivated using the pedal down activation of the foot control. In older versions of XO Smart Link, it was necessary to re-program the foot control of every program and plug-in to move the activate/deactivate functions to another activation. In XO Smart Link 4.0 you can choose the default activation to be used for activating and deactivating programs and plug-ins. It is also possible to change the activation used for activating and deactivating for all existing programs and plug-in's.

8.2 TREATMENT NAVIGATION

XO Smart Link 4.0 offers two choices of navigation when working with treatments:

Simplified:

- Joystick west: select and activate previous step
- Joystick east: select and activate next step
- Pedal down: deactivate treatment

Classic:

- Pedal down: deactivate current step of treatment, re-programs foot control to:

- Pedal down: activate selected treatment step
- Pedal left: select and activate treatment step to the left
- Pedal right: select and activate treatment step to the right
- B button: deactivate treatment

When 'Classic' navigation is used then treatments are navigated as in older versions of XO Smart Link. The 'Simplified' navigation scheme offers an alternative setup of the foot control that is easier and quicker to use. New users created with version 4.0 of XO Smart Link will, by default, use the new 'Simplified' navigation scheme. Users imported from an older version of XO Smart Link will have their navigation scheme set to 'Classic' by default.

8.3 SETUP

To change the default activation used for activating and deactivating plug-in's and programs and/or the treatment navigation open the 'Setup navigation window': First click the XO button, then select 'Configuration' and, finally, 'Setup navigation'.

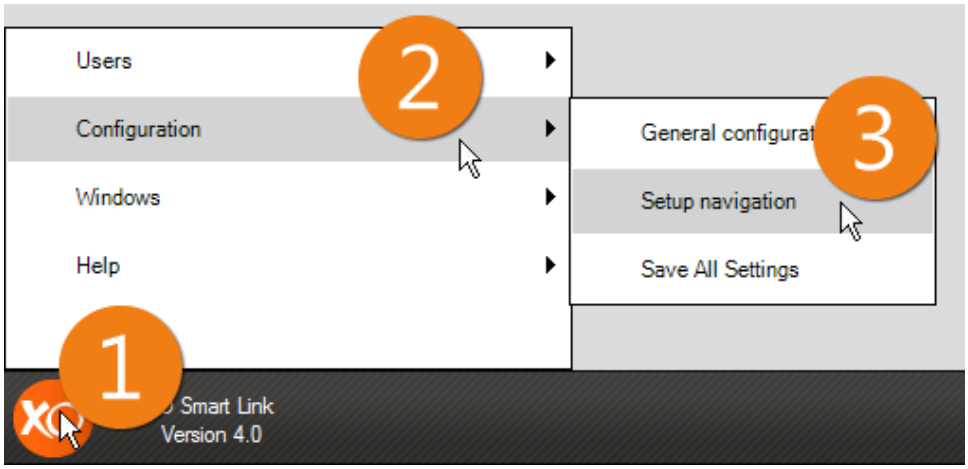


Figure 8. Opening the setup navigation window

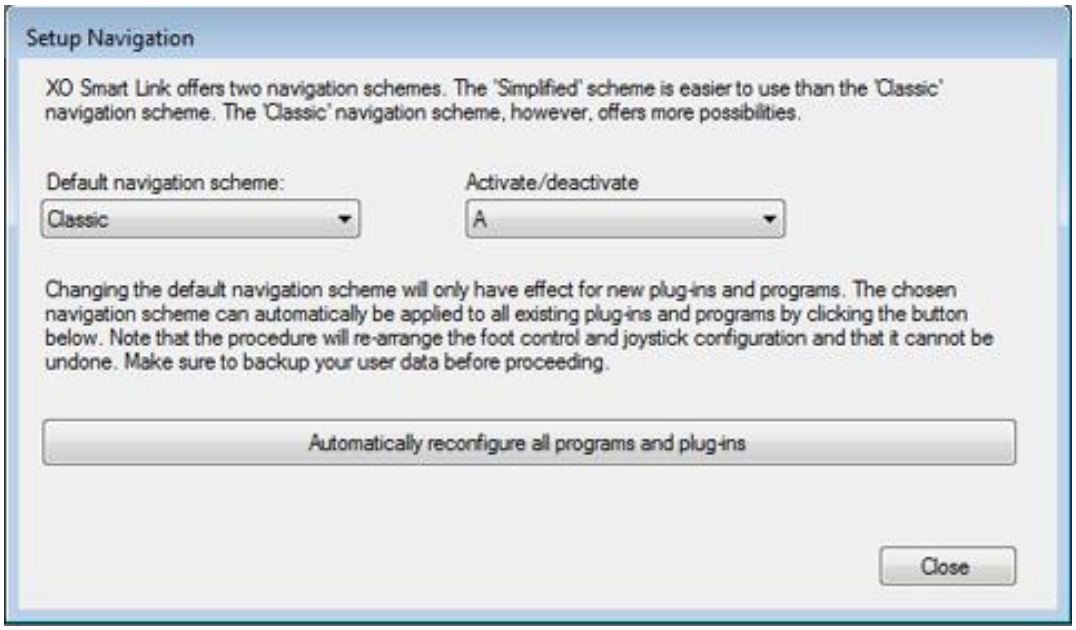


Figure 9. The setup navigation window

Select the desired treatment navigation scheme from the drop down list labelled 'Default navigation scheme' and the default activation to be used for activating plug-in's and programs from the drop down list labelled 'Activate/deactivate'.

The changes will only have an effect on new plug-in's, programs and treatments that are added after the change. Using the button 'Automatically reconfigure all programs and plug-ins' it is possible to automatically change the setup the existing plug-in's, programs and treatments. Because this procedure involves re-arranging the foot control and chair base joystick setup it is recommended that you make a backup of the user profile first.

Click 'Close' to close the window and remember to save changes to disk.

9 HOW-TO: CONNECT VIA ETHERNET

XO Smart Link version 4.1 allows for the PC to be connected to the workstation via Ethernet (local area network) through an 'Ethernet-to-serial server' box. Some uses experience stability issues related to the use of serial port communication. By connecting through Ethernet these problems can be eliminated.

In order for XO Smart Link to connect to a workstation via Ethernet an Ethernet-to-serial server box must be used. The figure below illustrates this setup.

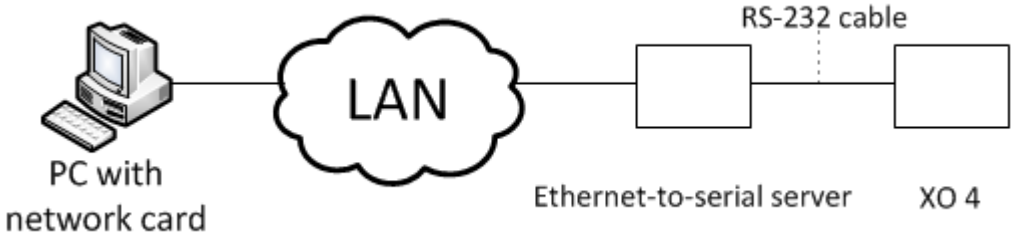


Figure 10. XO 4 connected to an Ethernet network through an Ethernet-to-serial server

Please note that XO does not offer support regarding the setup and use of networks or Ethernet-to-serial servers.

9.1 CHOSING AN ETHERNET-TO-SERIAL SERVER

There are a number of different Ethernet-to-serial servers on the market. We recommend that you use the ATOP SE5001-S2 serial server which is known to work. Please note that this particular server does not include a power supply. The server and power supply are both available from Danbit:

- ATOP SE5001-S2 Ethernet-to-serial server (order no: ETH1SER-MINI+)
- Power supply (order no: DC5V/1.5A-R-Q)

9.2 SETUP

The following is an overview of the steps required to setup XO Smart Link to connect via Ethernet. The exact details of the procedure depend on the choice of Ethernet-to-serial server and on the network. Knowledge and expertise in network administration is required to successfully complete the setup.

Step 1: Connect the Ethernet-to-serial server

Connect the Ethernet-to-serial server to the same network as the PC running XO Smart Link using a standard network cable. Connect the RS-232 port of the Ethernet-to-serial server to the RS-232 port of the XO 4 workstation.

Step 2: Assign an IP address to the Ethernet-to-serial server

The Ethernet-to-serial server must be assigned an IP address and a port. The address and port must be static (i.e. they must not change) and are used to identify the server on the network. Please see the documentation accompanying the Ethernet-to-serial server for further instructions.

Most networks use a feature called DHCP to automatically assign IP addresses to devices on the network. If this feature is used the DHCP server should be configured so that it will always assign the same address to the server. Alternatively, the server should be manually assigned an address outside the range of addresses managed by the DHCP server.

Step 3: Configure the RS-232 port

Open the administration panel of the Ethernet-to-serial server (see documentation accompanying the server) and set the following configuration for the RS-232 port:

- Baud rate = 115200
- Parity = none
- Data bits = 8
- Stop bits = 1
- Flow control = none

Depending on the Ethernet-to-serial server there may be more options.

Step 4: Setting XO Smart Link

In the "Connect" window of XO Smart Link, shown at start-up, choose "Ethernet" and enter the IP address and port of the Ethernet-to-serial server. Click 'Connect' to begin establishing the connection.

10 HOW-TO: CONFIGURE FOOT CONTROL AND JOYSTICK

XO Smart Link allows you to configure the function of the foot control and joystick. Each cell in the XO bar is associated with its own function of the foot control and joystick. To configure the function associated with a cell you need to right click that cell. This will bring up a menu. Select 'Configuration' and then 'Configure input'. Now the 'Configure actions' dialog will be shown.

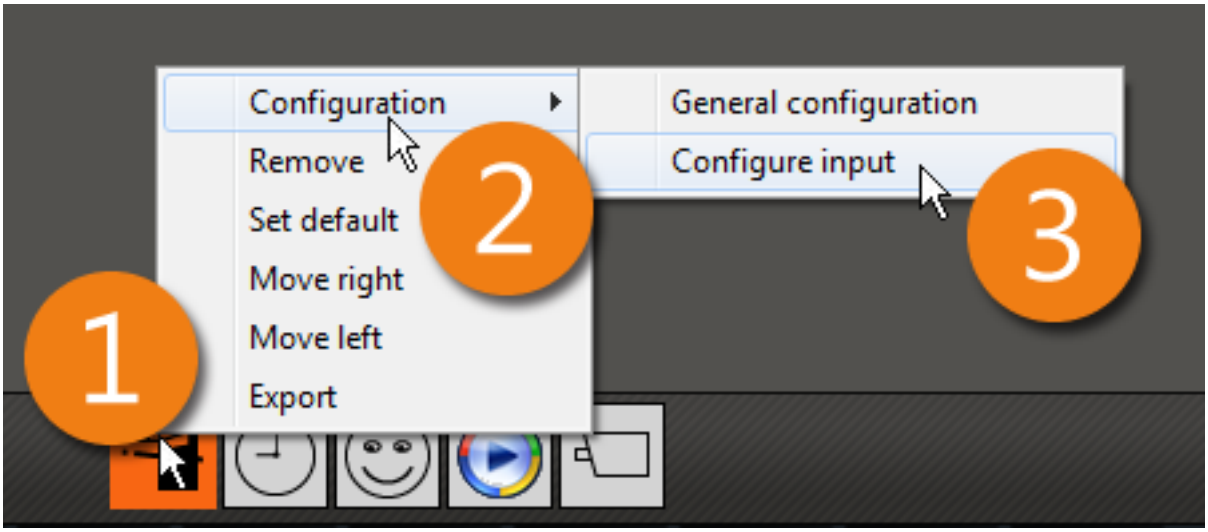


Figure 11. To start configure the foot control and joystick for a cell: 1) right click the cell, 2) select 'Configuration' and 3) click 'Configure input'.

The 'Configure actions' dialog contains a list of actions to the left and an image of the foot control to the right. Note that the content of the list depends on the type of cell. You configure the foot control by simply dragging icons from the action list to the buttons of the foot control. To configure the joystick, select it from the list above the foot control image in the right side of the dialog.

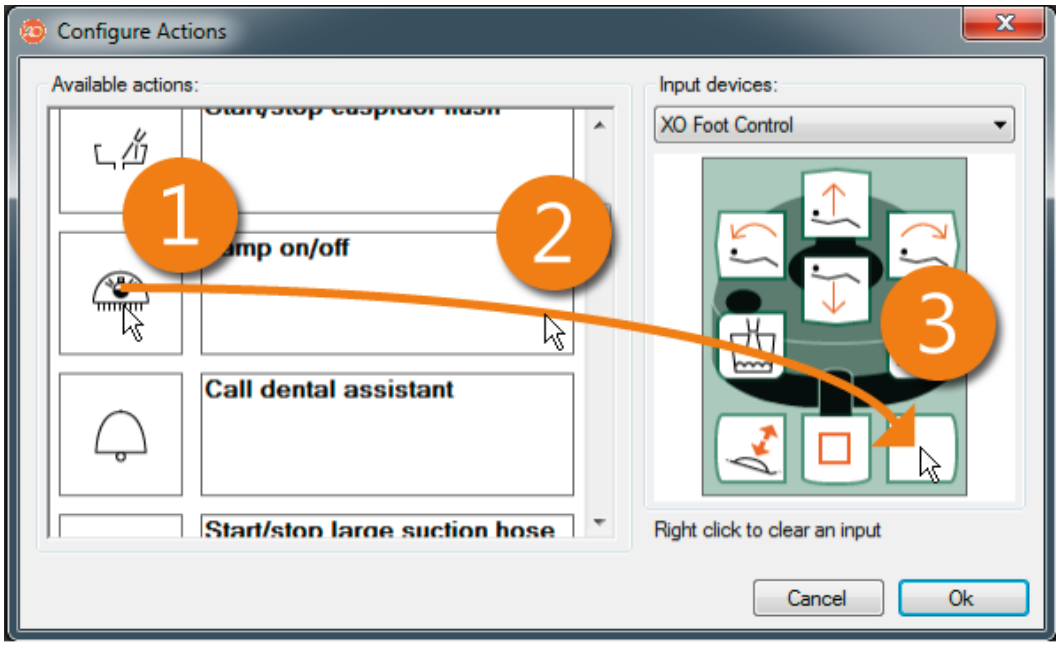


Figure 12. Drag actions to foot control and joystick buttons: 1) left click and hold on an icon, 2) drag (while keeping the left mouse button pressed) to a button, 3) release the left mouse button

Note: configuration of the foot control and joystick is always done on a per-cell basis. This gives you the most detailed control but also means that if you want multiple cells to have the same configuration you need to repeat the same setup procedure for all cells.

11 HOW-TO: SETUP SHORT-CUTS

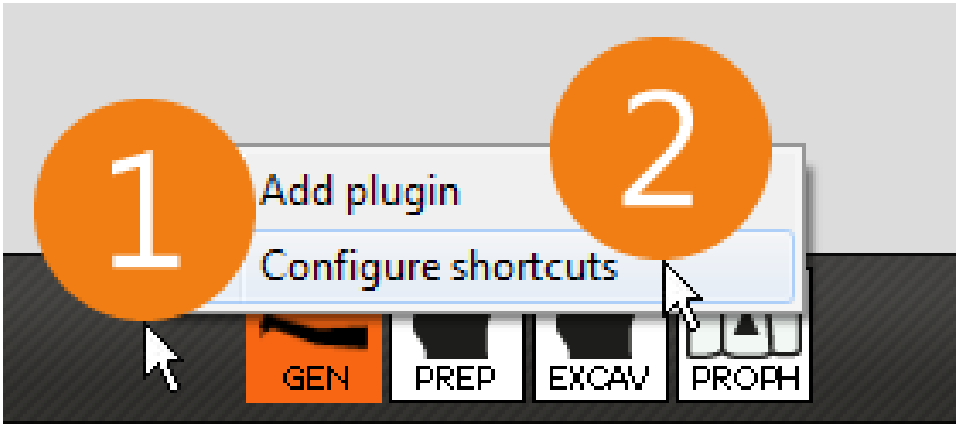
Short-cuts are used to activate plug-in's and instrument programs quickly. When no plug-in or program is activated then the foot control and the chair base joystick can be used to navigate the current list of plug-

in's or programs. This is done by means of the "left", "right" and "activate" functions. Short-cuts can be used as an alternative to having to navigate the list using the "left", "right" and "activate" functions. A short-cut can be created for a specific plug-in or program and then be bound to a button of the foot control or chair base joystick. When that button is activated, the plug-in or program will automatically be selected and activated.

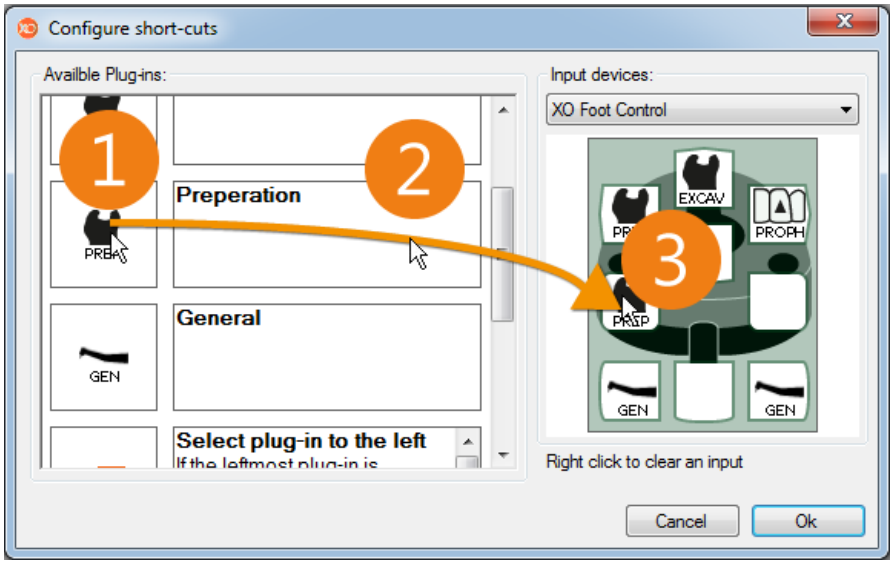
The setup of the foot control and chair base joystick with respect to short-cuts depends on the activate instrument. This means that a different set of short-cuts can be used for each type of instrument.

11.1 CREATE A SHORT-CUT

To create a short-cut, right click on the XO bar (not on the cells) and select 'Configure shortcuts'. Now the configure short-cuts window will appear.

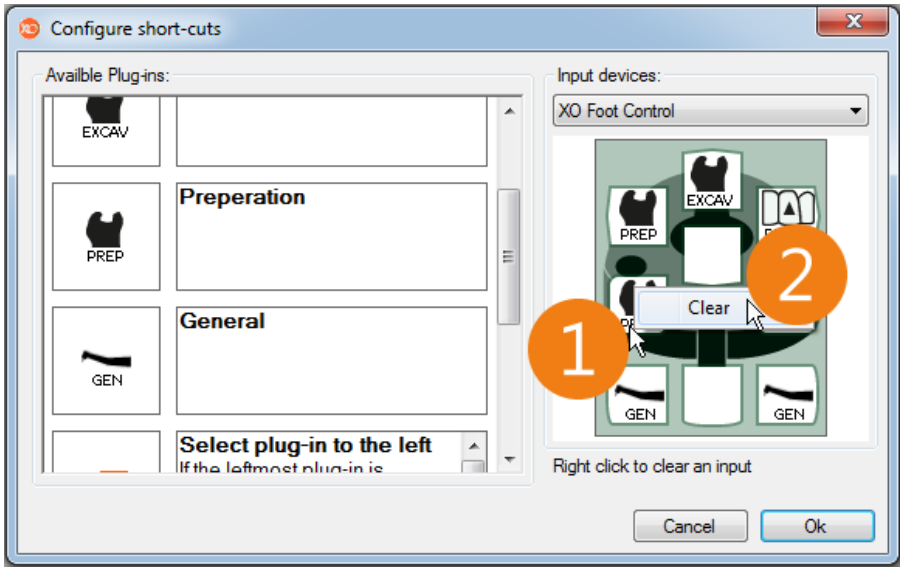


The configure short-cut window contains a list of the plug-in's and programs currently available and a picture of the foot control showing the current setup. To create a new short-cut, drop the icon of the desired plug-in or program from the list to a button on the foot control. When you are satisfied with the setup, click 'Ok' to accept the changes.



11.2 DELETE A SHORT-CUT

To delete a short-cut, open the configure short-cuts window. Right click on the short-cut you wish to delete on the image to the right side and select 'Clear'.



12 HOW-TO: FIX STABILITY ISSUES

The communication link between XO Smart Link and the unit may break down. If this happens XO Smart Link must be restarted for a new connection to be established. Under normal conditions the link should only be broken if the PC or the unit is turned off or the cable between the two is disconnected. In some cases, however, the link may break for other reasons.

XO Smart Link and the unit communicates through a serial (RS-232) cable. The only way to check the status of link is to measure the time since the last data was received. If one end of the link does not receive data within a fixed period of time (the timeout period) then that end will conclude that the other end is unreachable and terminate the communication. If this happens during treatment, then XO Smart Link must be restarted before the treatment can be resumed. Besides turning off the PC or the unit and disconnecting the cable the communication link may break down because of:

12.1 SLEEP AND POWERSAVING

By default, most PC's will go into sleep or power saving mode if not used for a period of time. If this happens the communication link will break because it will suspend all the programs (including XO Smart Link) that runs on the PC.

12.2 PROBLEMS WITH THE COM PORT AND/OR THE DRIVER

The PC is connected to the communication cable through either a built-in COM port or a USB-to-serial converter. Such devices require drivers to work properly. Most problems with stability are due to malfunctioning drivers. This is especially an issue with Windows 7 where not all COM ports and USB-to-serial converters are properly supported.

12.3 OTHER PROGRAMS ON THE PC

Other programs on the PC may lock the PC temporarily. When a program locks the PC no data will be forwarded to XO Smart Link and this may cause XO Smart Link to conclude that the communication link

has been broken. This is especially an issue with imaging programs on slower PC's. When video capturing is started the imaging program may lock up the machine for several seconds while initializing the video.

12.4 BAD OR DAMAGED COMMUNICATION CABLE

In some rare cases a bad or damaged communication cable can cause stability issues. If the cable is damaged, then data transmitted through it may become corrupted which leads to communication errors and break downs. A damaged cable will most likely result in very rapid break downs (a few minutes apart).

12.5 SOLUTIONS:

Upgrade to the latest version

In XO Smart Link 4.0 the communication has been greatly improved over previous versions. If you are running an older version of XO Smart Link the first thing to try is to upgrade to the latest version. For instructions on how to determine what version of XO Smart Link you have installed see 3 HOW-TO: CHECK THE VERSION NUMBER. To download the latest version of XO Smart Link, go to Support on xo-care.com.

Update com port drivers

To update the drivers for the COM port or USB-to-serial cable you need to first identify its manufacturer and model. Most manufacturers provide free download of drivers for their products on their websites. Go to the website of the manufacturer and download the latest drivers that matches your model and the operating system of your PC. Follow the instructions provided by the manufacturer.

Give XO Smart Link high priority

If the cause of the problem is believed to be other programs on the PC temporarily locking up the system, then you can try to increase the priority of XO Smart Link. When the priority of XO Smart Link is set to "High" it is less likely that another program on the same PC will be able to suspend XO Smart Link for a longer period of time. To set the priority first open XO Smart Link and go to the general configuration window. To open this window, click XO Button -> Configuration -> General configuration. In the "Misc." tab of the configuration window check the checkbox labelled "Run at high priority".

Replace the communication cable

If the cable is believed to be the cause of the problem, then replace it.

Enabled auto re-connect

If the cause of the problem cannot be found, then the auto re-connect feature may be used to avoid having to re-start XO Smart Link during treatment. See 7 HOW-TO: SETUP AND USE AUTO RE-CONNECT to learn more.

13 HOW-TO: FIX 'DEFAULT USER FILE NOT FOUND' ERROR

13.1 SYMPTOMS:

XO Smart Link fails to start automatically with the message: "Error creating user: default user file not found". When XO Smart Link is started manually no such error is given.

Note: This error is fixed in version 4.1

13.2 GENERAL DESCRIPTION:

The cause of the error is that the program folder of XO Smart Link is not properly set as the "start-in" folder when the program is started automatically through either the Windows Startup folder of the Windows Task Scheduler. This error will be fixed in the next release of XO Smart Link. Until the workaround below can be used to make XO Smart Link start properly.

13.3 SOLUTION:

The solution to the problem depends on which of the two methods (short-cut in the Startup folder or Windows Task Scheduler) is used for automatically starting XO Smart Link. Regardless of which method is used you must know the install path of XO Smart Link.

Finding the install path of XO Smart Link

XO Smart Link is installed into a sub-folder of the "Program files" folder on 32-bit systems (Windows XP, Windows 7 32-bit) and to the "Program files (x86)" folder of 64-bit systems (Windows 7 64-bit). Open the windows explorer and navigate the to the relevant program files folder ("Program files" or "Program files (x86)"). From there on navigate to XO Care -> XO Smart Link -> Bin. When the folder is open in the explorer you can copy the path from the address box at the top.

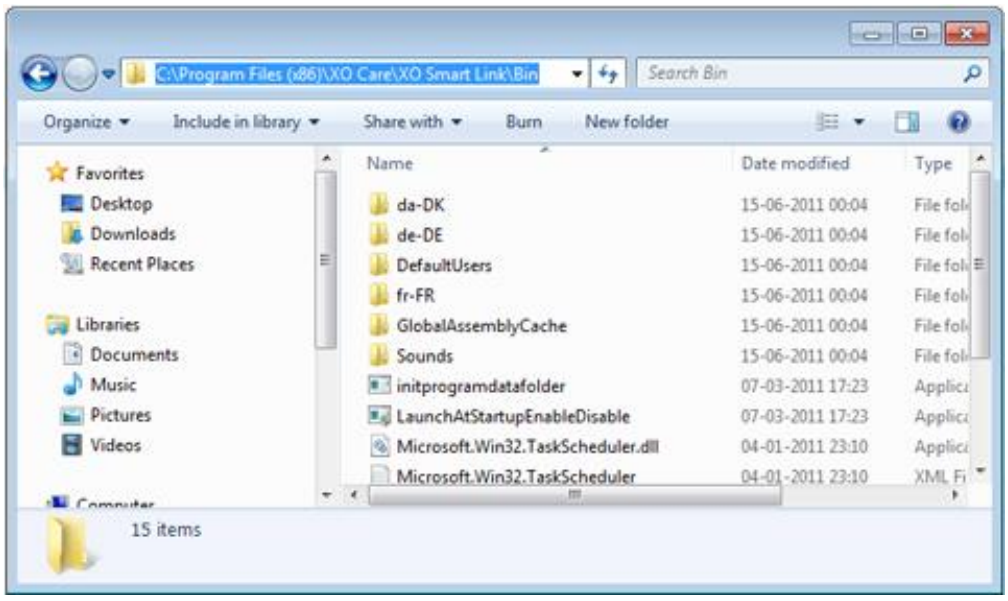


Figure 13. Install folder open in the windows explorer on a Windows 7 64-bit system

Solution (Windows Startup folder)

1. Open the Windows Startup Folder by clicking Start -> All programs -> Startup
2. Right click on the XO Smart Link short-cut in the Startup folder to show its associated menu
3. Click on "Properties" to show the properties window of the short-cut
4. In the "Shortcut" tab of the properties window enter (or paste) the XO Smart Link install path to the textbox labelled "Start in". Make sure the path is surrounded by a pair of quotes ("C:\Program files ... ")

5. Click "Apply" and then "OK" to save and close
6. Restart the machine

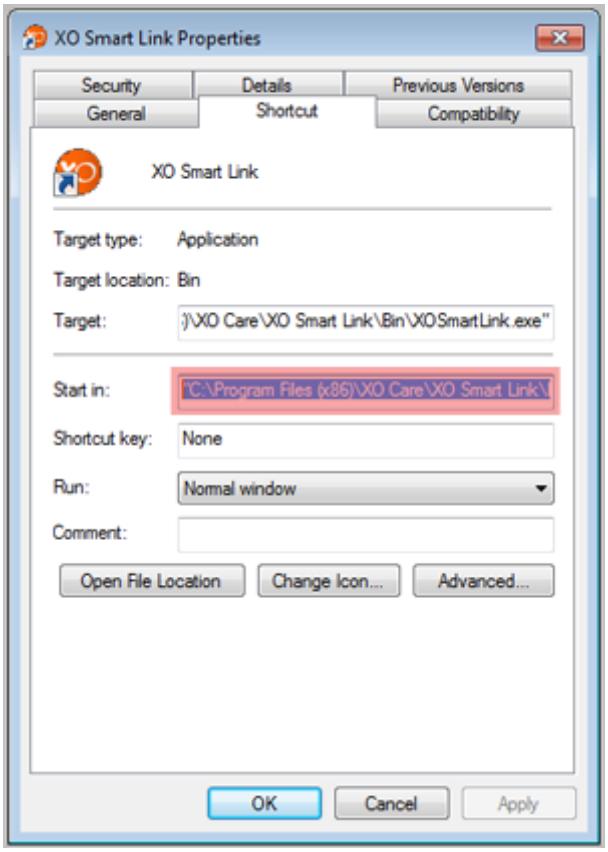


Figure 14. Properties window for the XO Smart Link short-cut

Solution (Task Scheduler)

1. Open the Windows Task Scheduler: Start -> Control panel -> Administrative tools -> Task Scheduler

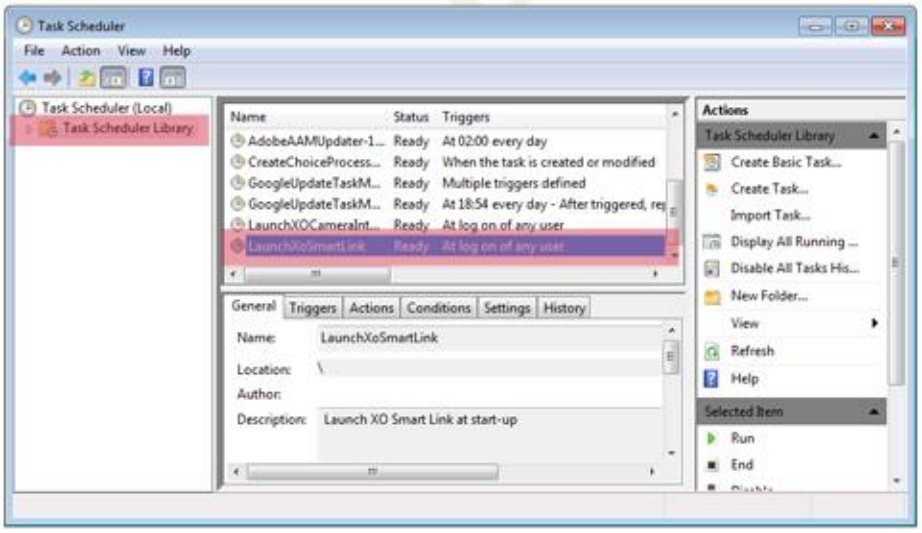


Figure 15. Task scheduler of Windows 7

2. In the Task Scheduler window click on the entry "Task Scheduler Library" in the left side
3. Locate and double click the entry "LaunchXoSmartLink" in the list located in the center of the window. This will show the properties window of the task.

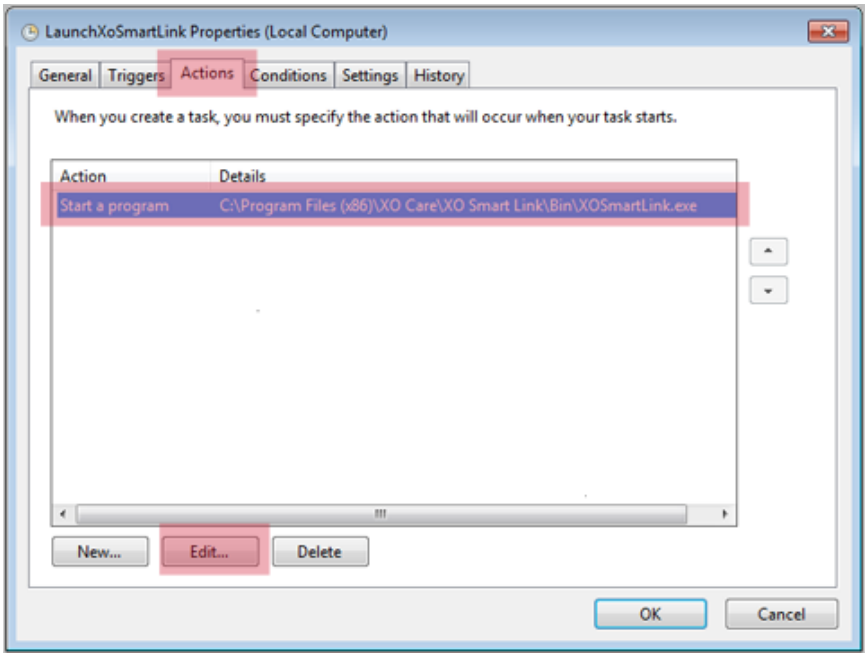


Figure 16. Properties window of the LaunchXOSmartLink task

4. Click on the "Actions" tab in the properties window
5. Click on the action "Start a program" and then click on the "Edit ..." button

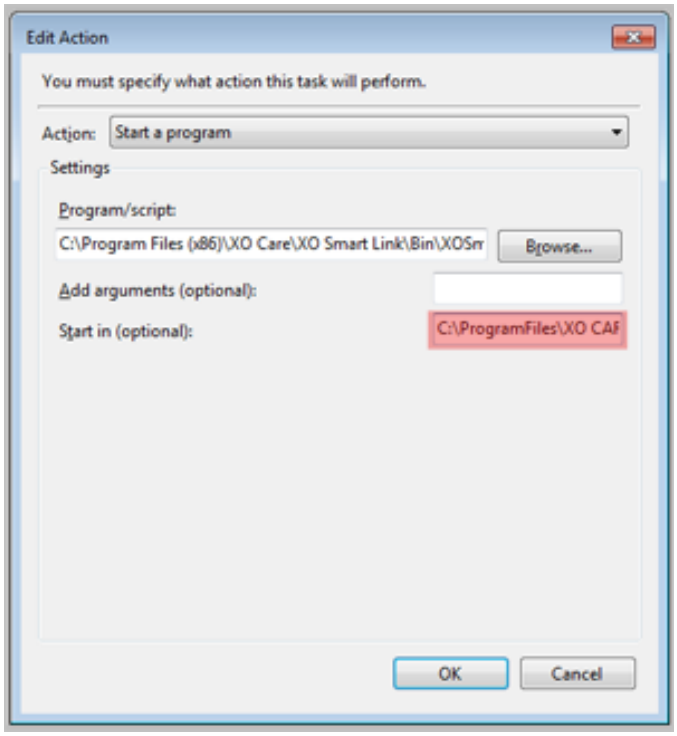


Figure 17. Edit action window

6. In the Edit Action window enter (or paste) the install path of XO Smart Link to the textbox labelled "Start in (optional)"
7. Click "Ok". A message will now appear:

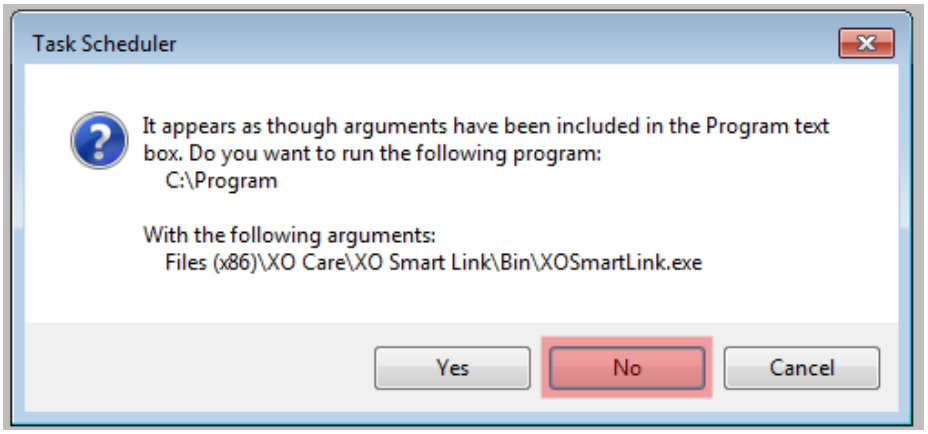


Figure 18. Message shown when closing "Edit action" window

8. Click "No" (important!) to close message
9. Click "Ok" to close the properties window and close the Task Scheduler
10. Restart the machine

13.4 FREQUENTLY ASKED QUESTIONS

Changes made to one or more users are lost

In order to save changes made you need to click the 'Save all settings' button or, alternatively, restart XO Smart Link. If this is not done, then any changes made will be lost when the system is restarted.

How do I determine the torque efficiency of my handpiece?

Special tools are needed to determine the exact torque efficiency of a handpiece. You can find a list of efficiencies for some handpieces here. If your handpiece is not on the list, then contact the manufacturer of the handpiece.

13.5 TECHNICAL FREQUENTLY ASKED QUESTIONS

After connecting I get a message saying that the firmware version is 0

This is an issue with the COM port. The chosen port is a virtual port and cannot be used for communicating with the unit. Try another port.

Multi-screen: The image looks distorted on one screen

This is an issue with split screen solutions where the different screens have different resolutions. There is no good way to correct this other than to be sure that all screens have the same resolution. Alternatively, the 'extended desktop' mode can be used instead.

After upgrading I get the message "Motor (MX) state & default programs added"

This is not an error and the message can safely be ignored. The message is shown when a user profile saved with a version of XO Smart Link that did not support the Bien Air MX motor is upgraded to a version that does.

Manufacturer
XO CARE A/S
Copenhagen
Denmark

CE 0470

Ref no.: YB-670
Ver. 1.10

Subject to change.

Usserød Mølle
Håndværkersvinget 6
DK 2970 Hørsholm
+45 70 20 55 11
info@xo-care.com