OLYMPUS

Setup Manual

Software Setup for Prior SZX2 Zoom/Objective Encoder

ESZX-ZE10/16Zoom/ObjectiveEncoder0209

Printed in Germany

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Contents

What is the SZX2 Zoom/Objective Encoder?

The SZX2 Zoom/Objective Encoder enables you to easily acquire correctly calibrated images using your "SZX 2" stereo microscope.

Stereomicroscopy

Stereo microscopes use two separate light paths; each delivering an image of the observed object. Since the light paths are at a slightly different angle - the so called convergence angle - to the object, each eye perceives a slightly different image of the object. The two slightly different two-dimensional images perceived by the two eyes are processed by the brain to provide a three-dimensional impression.

Characteristics of the stereo microscope

Stereo microscopes are characterized by having relatively weak magnifying objectives. They usually possess a single objective. The stereo microscopes from the "SZX 2" series (stereo microscopes "SZX 10" and "SZX 16") can be equipped with an additional objective.

Since the objectives usually have low magnification, e.g., 0.5X and 1X, higher resolutions have to be achieved by using the zoom optic. For example, the discrete magnification levels of the "SZX 10" stereo microscope (zoom adjustment knob on the stereo microscope body) are: 0.63X; 0.8X; 1X; 1.25X; 1.6X; 2X; 2.5X; 3.2X; 4X; 5X, and 6.3X.

The following relationship applies to any microscope system:

Total magnification = objective magnification x zoom magnification x ocular magnification (or TV adapter magnification).

Calibrating images

Your software enables you to acquire length calibrated images. The calibration data are calculated from the total magnification and the pixel size of the camera being used. In order to be able to acquire images that are properly calibrated, the current zoom magnification must be known for each acquired image.

When installing the software

When installing the software, automatically, you will be prompted to calibrate the so called logical input channel. In the logical input channel, you determine the settings for the image acquisition. When installing the software, you specify the name of the SZX2 Zoom/Objective Encoder, the two objective magnification values as well as the magnification value of the TV adapter you will use.

The magnifications are then automatically taken from the entries you made or read out of your stereo microscope.

Interactively

If the calibration is not exact enough or not available, you will have to execute it by yourself (i.e., interactively).
For example, it might be necessary to recalibrate individual zoom magnifications. Especially the end positions of the zoom adjustment knob can diverge from the displayed magnifications.
If you have exchanged an objective or if you have mounted a new camera, a new calibration will also be necessary.

For this purpose, please read chapter "Manually calibrating the input channel" on page 21.

During calibration the actual pixel width and pixel height (in µm) will be determined for the current magnification level. These calibration values have already been predefined for each magnification level in the factory settings. They correspond to the theoretical values, but can vary slightly from system to system.

Switching objectives

When using the SZX2 Zoom/Objective Encoder, both the position of the objective and the zoom magnification will be automatically read out so that your software always uses the correct calibration data. You can quickly and easily switch back and

forth between the two objectives and acquire length calibrated images with all of the available objective zoom combinations. The current objective magnification and zoom magnification will continually be displayed in the software's user interface.

Scope of Validity / Conventions

This documentation describes the software setup procedure for the following Prior SZX2 Zoom/Objective Encoder models:

- SZX2-ZB10-ZE (Zoom Encoder)
- SZX2-ZB16-ZE (Zoom Encoder)
- SZX2-2RE10-E (Zoom/Objective Encoder)
- SZX2-2RE16-E (Zoom/Objective Encoder)

In this documentation, the term "SZX2 Zoom/Objective Encoder" will be used for any of these models. The installation procedure is shorter when using a Zoom Encoder with no Objective Encoder.

The term "software" stands for any software product of OLYMPUS SOFT IMAGING SOLUTIONS with which the SZX2 Zoom/Objective Encoder can be used; for example " OLYMPUS analysis Particle Inspector".

Installation

Connecting the SZX2 Zoom/Objective Encoder with the PC

1) Connect the Zoom/Objective Encoder with RS232 communication lead (delivered with the SZX2 Zoom/Objective Encoder) to your PC's serial RS232 COM port. You can use any available port on your PC.

Installing the software

Warning

Install the software before connecting your camera to your PC.

The software can be operated with the following operating systems: Microsoft Windows 2000, Microsoft Windows XP, and Microsoft Windows Vista. The installation of the software is identical for all three operating systems. The description of the software installation will therefore be independent of the operating system you are using.

To install the software, simply follow the instructions the installation wizard gives you; make the necessary entries, then click the Next > button each time to continue.

In the following, only a selected few of the installation wizard's dialog boxes will be shown.

1) Close any and all application programs.
2) Your software is protected by a dongle (software protection key).
   Insert the dongle into one of your PC's USB ports.

Software protection dongle

► The Found New Hardware Wizard dialog box will appear. The operating system is trying to install a driver for the dongle.

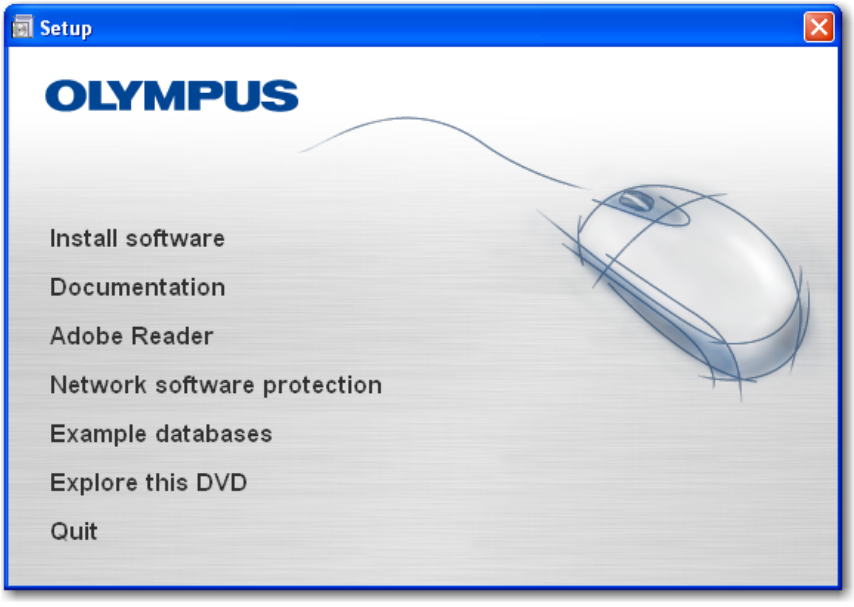
As soon as you have inserted the dongle, the Found New Hardware Wizard dialog box will appear. Close this dialog box by clicking the Cancel button.

Warning The correct dongle driver can only be installed during the software installation.

3) Close the Found New Hardware Wizard dialog box by clicking the Cancel button.
   Keep clicking the Cancel button until the dialog box disappears.

4) Put the installation CD-ROM (resp. DVD-ROM) into your CD-ROM (resp. DVD-ROM) drive.
   ► The setup program will start automatically - unless you have deactivated the autorun function. If so, start the setup.exe file manually via Windows Explorer.

When you insert the installation DVD, the setup menu will come up automatically. Select the Install software entry.



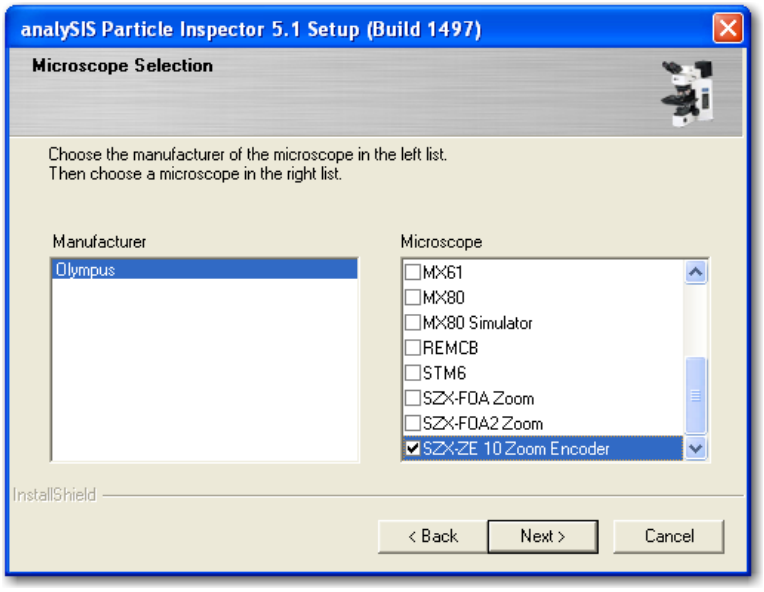
5) Select the Install software entry located in the set up menu to reinstall your software or to execute an update.
   ► A dialog box with the license text will appear automatically.

6) Read the licensing agreement carefully.
   When you are ready to accept the licensing agreement, click the Yes button.

7) In the Customer Information dialog box, enter your name and your company name. The name, under which the operating system is registered, will be suggested.

8) In the Microscope Selection dialog box, select the Olympus entry from the Manufacturer list. From the Microscope list, select the appropriate check box: SZX-ZE10 Objective/Zoom Encoder, SZX-ZE16 Objective/Zoom Encoder, SZX-ZE10 Zoom Encoder, or SZX-ZE16 Zoom Encoder. Afterwards, click the Next > button.

In the Microscope Selection dialog box, select the SZX-ZE10 Objective/Zoom Encoder, SZX-ZE16 Objective/Zoom Encoder, SZX-ZE10 Zoom Encoder, or SZX-ZE16 Zoom Encoder check box.



► A new Microscope Selection dialog box appears. It will show the selection you have made.

9) Click the Next > button.

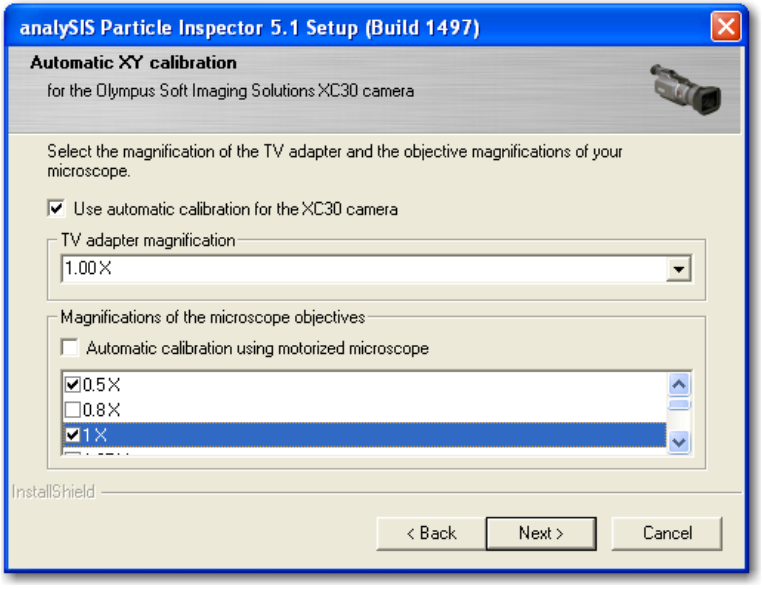
10) In the Camera Selection dialog box, select the appropriate entries in the Manufacturer and Camera lists, then click the Next > button.

► A new Camera Selection dialog box appears. It will show the selection you have made.

11) Click the Next > button.

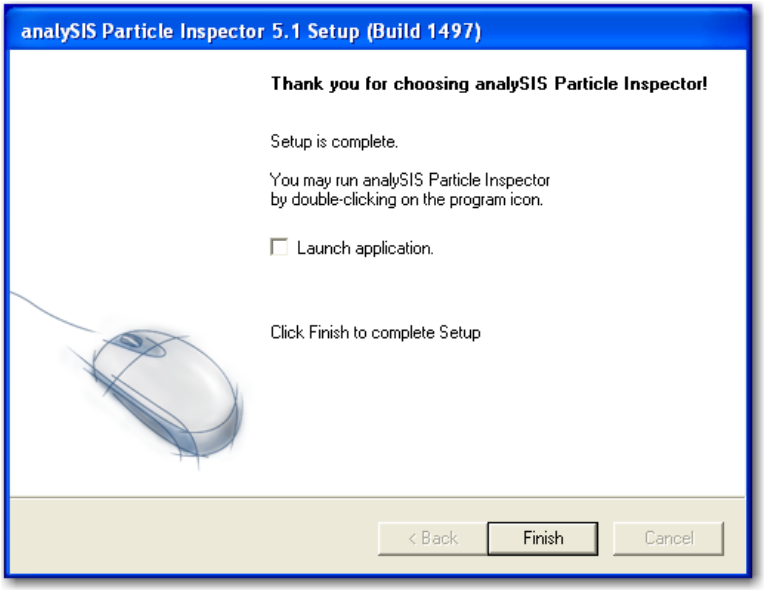
12) In the Automatic XY calibration dialog box, clear the Automatic calibration using motorized microscope check box located in the Magnifications of the microscope objectives group. In this group, select your stereo microscope's two objective magnifications. To do so, select the corresponding check boxes.

In the Automatic XY calibration dialog box, select your stereo microscope's two available objective magnifications, for example 0.5X and 1X.



13) Click the Next > button. Make the appropriate entries in the remaining dialog boxes provided by the installation wizard.

Your software installation is finished. Click the Finish button to exit the dialog box.



14) Click the Finish button to finish your software installation.
► Your software is now installed.

Installing the camera

The camera can be operated using the following operating systems: Microsoft Windows 2000, Microsoft Windows XP, and Microsoft Windows Vista. The installation of the camera differs from operating system to operating system. The installation of the camera for Windows 2000 (on page 10), and Windows XP operating systems (on page 12) will be described.

Installation under Windows 2000

Mounting the camera

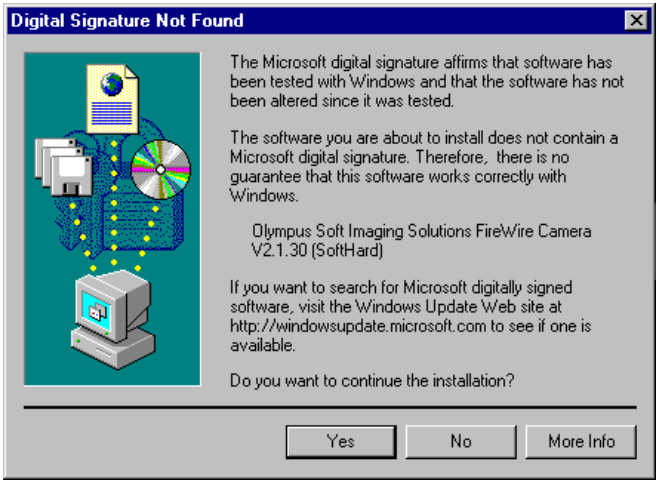
Warning Install the software before connecting the camera to your PC.

1) After installing the software, use the FireWire cable to connect the camera to your PC.

Registering the camera driver

The camera driver is automatically installed during the installation of the software. Since it does not have a signature, it will not be automatically used by the operating system. After you are finished installing the software and connecting the camera to your PC, you will have to register the camera driver with your operating system.

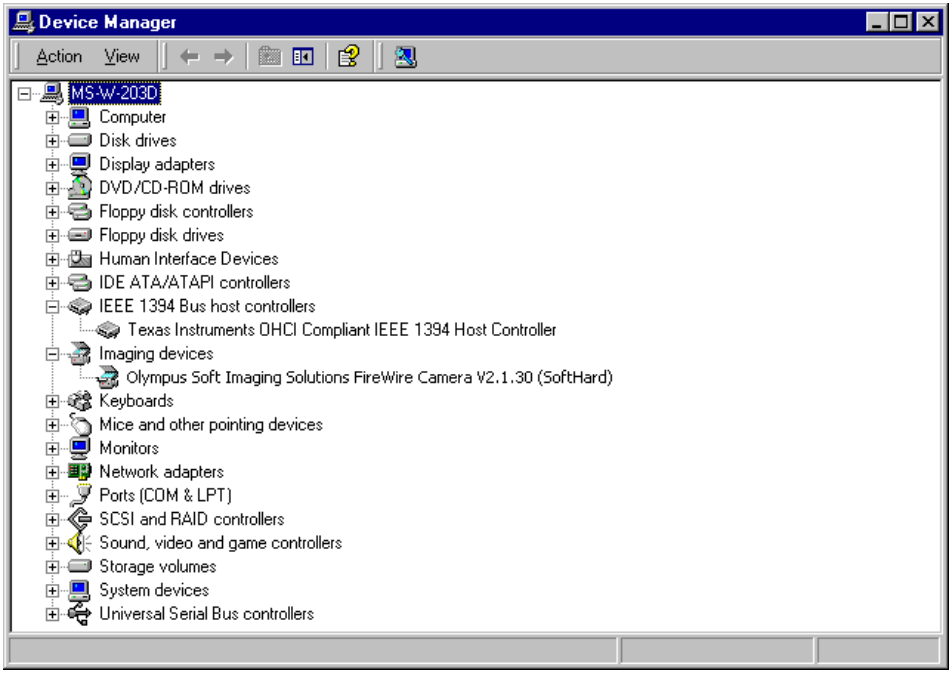
► After having connected your camera with your PC, the Digital Signature Not Found dialog box appears on your monitor.



2) Click Yes.
   ► The camera driver is installed.

3) Use the Device Manager dialog box to check that the camera driver has been properly installed.
   Open the Device Manager dialog box. For example, in this way: Open the context menu by rightclicking the My Computer entry located in the Windows Explorer (resp. on the desktop). Select the Properties command. In the System Properties dialog box, activate the Hardware tab and click the Device Manager... button. Make sure that an entry has been made in the Olympus Soft Imaging Solutions FireWire Camera V2.1.30 (SoftHard) form below the Imaging devices entry located in the Device Manager dialog box. This entry corresponds

to your camera's driver name. The version number is contained in the driver name and it does not have to be "2.1.30".



Installation under Windows XP

Mounting the camera

Warning Install the software before connecting the camera to your PC.

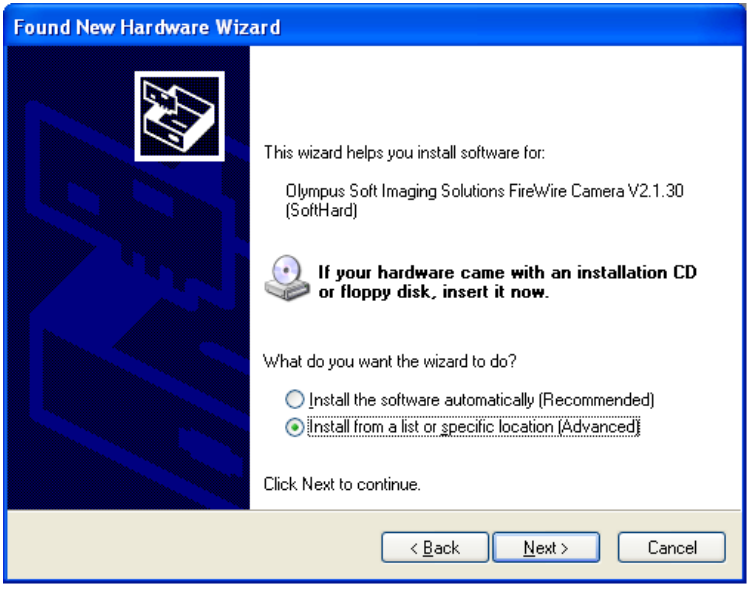
1) After you have successfully installed your software, you may now connect your camera to your PC.

Registering the camera driver

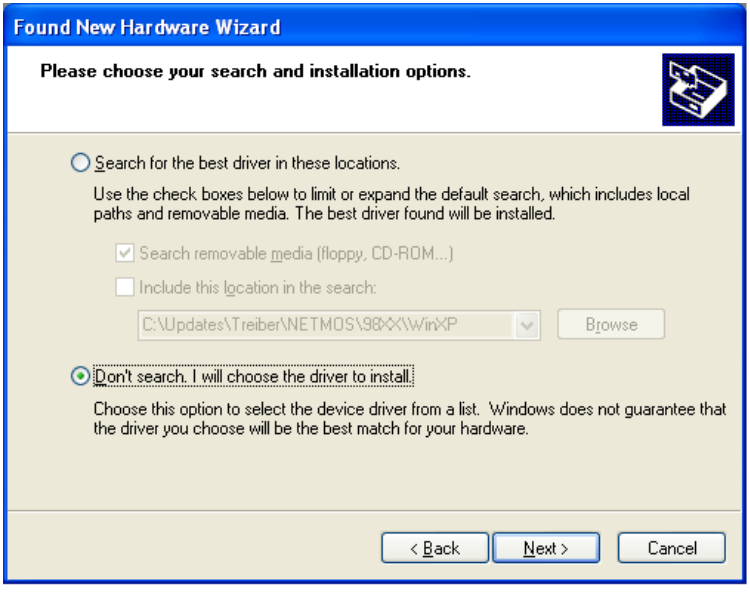
The camera driver is automatically installed during the installation of the software. Since it does not have a signature, it will not be automatically used by the operating system. After you are finished installing the software and connecting the camera to your PC, you will have to register the camera driver with your operating system.

► After having connected your camera to your PC, Windows will automatically start the Found New Hardware Wizard wizard.

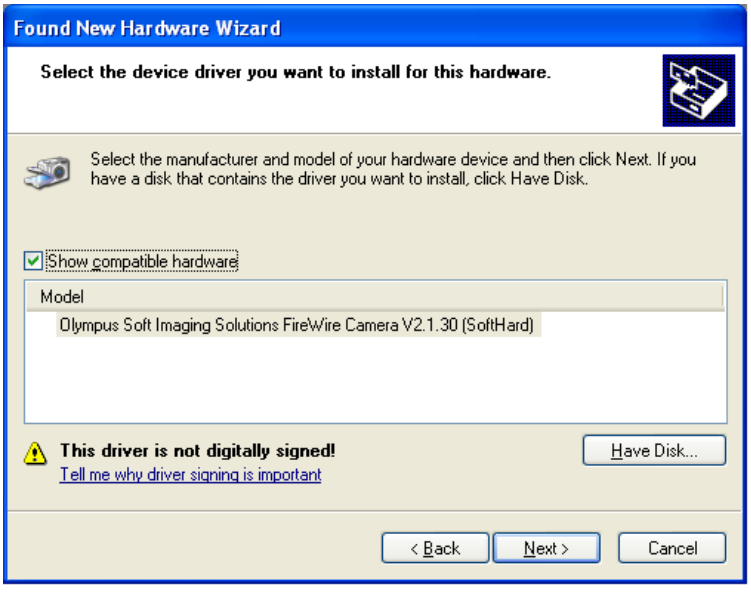
2) Select the No, not this time option and click the Next > button.
► A new Found New Hardware Wizard dialog box appears.



3) Select the Install from a list or specific location (Advanced) option and click the Next > button.
   ► A new Found New Hardware Wizard dialog box appears.

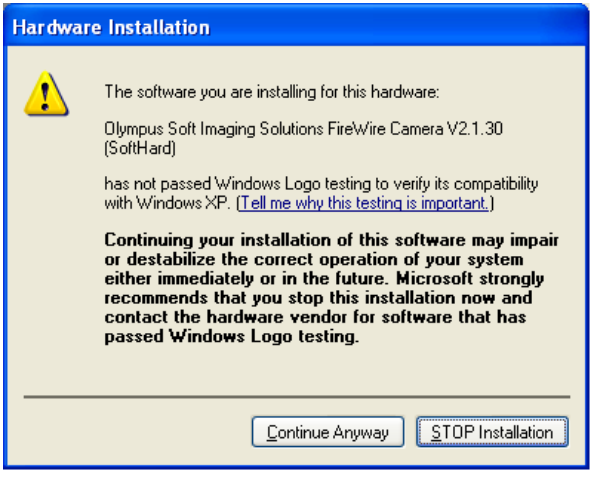


4) Select the Don't search. I will choose the driver to install option and click the Next > button.
   ► A new Found New Hardware Wizard dialog box appears. It displays your camera's driver name.

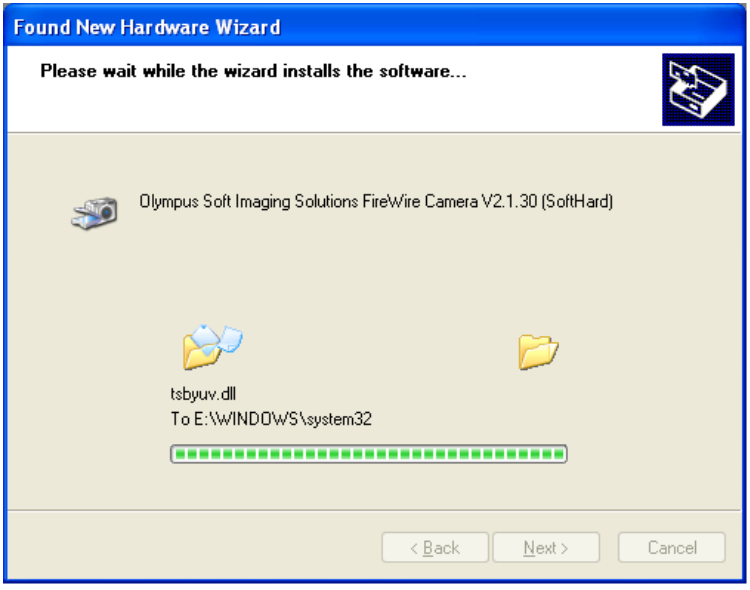


5) Select the appropriate camera driver.
   - ► The camera entry will be highlighted in the list.
6) Click the Next > button.
   - ► A new Found New Hardware Wizard dialog box appears, telling you to wait until the wizard has installed the software.

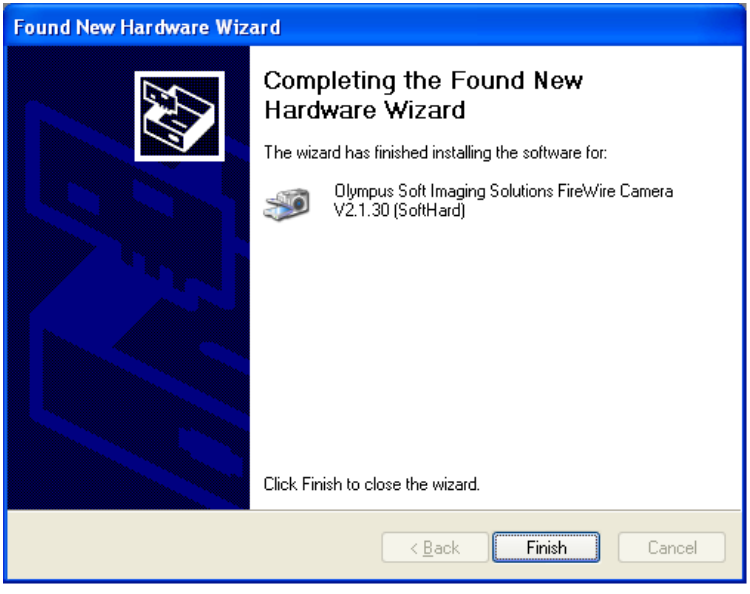
In some cases, this Hardware Installation dialog box opens.



7) The information in the Hardware Installation dialog box is of no importance for the installation. Therefore just click the Continue Anyway button.
   - ► The Hardware Installation dialog box closes.
   - ► The Found New Hardware Wizard dialog box that was in the background now appears in the foreground.



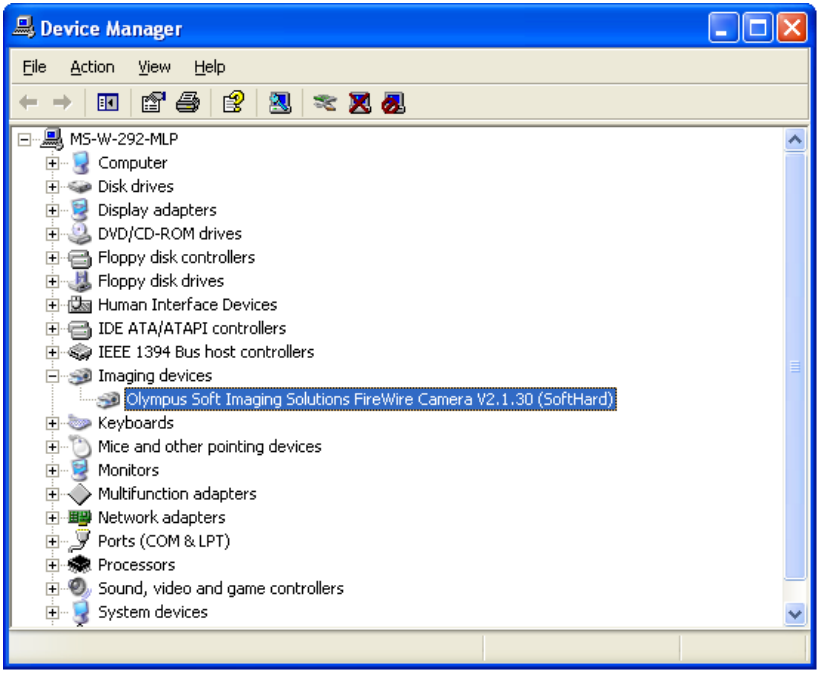
► A new Found New Hardware Wizard dialog box appears.



8) Click the Finish button to close the Found New Hardware Wizard wizard.
   ► The camera driver is installed.

9) Use the Device Manager dialog box to check that the camera driver has been properly installed.
   Open the Device Manager dialog box. For example, in this way: Open the context menu by rightclicking the My Computer entry located in the Windows Explorer (resp. on the desktop). Select the Properties command. In the System Properties dialog box, activate the Hardware tab and click the Device

Manager... button. Make sure that an entry has been made in the Olympus Soft Imaging Solutions FireWire Camera V2.1.30 (SoftHard) form below the Imaging devices entry located in the Device Manager dialog box. This entry corresponds to your camera's driver name. The version number is contained in the driver name and it does not have to be "2.1.30".



Setting up the input channel

You have installed the camera with your operating system. You will now have to configure your input channel.

What are input channels?

The OLYMPUS SOFT IMAGING SOLUTIONS cameras use logical input channels. For each OLYMPUS SOFT IMAGING SOLUTIONS camera there will be one or more logical input channels set up. Logical input channels contain, for example, the information about how large an image format is and what happens with the image signal before it reaches the image buffer. An input channel for the XC30 camera will typically be named "XC30 ...". When you use another camera, the channel will be correspondingly named "<Camera name> ...".

Each input channel must be calibrated separately.

Calibrating the input channel

When installing the software with an OLYMPUS SOFT IMAGING SOLUTIONS color camera, two input channels whose settings enable you to immediately acquire images, will be automatically set up. One input channel uses your camera's black & white mode, the other its color mode.

During the software installation, an automatic calibration is set up by the specification of the two objective magnifications and the TV adapter being used (see section "Installing the software" on page 5). Thanks to this automatic calibration you can then

acquire calibrated images without having to make any further preparations. However, if you want to execute a new calibration, please go to chapter "Manually calibrating the input channel" on page 21. A new calibration is, for example, necessary if you have switched objectives or have mounted another camera.

Note

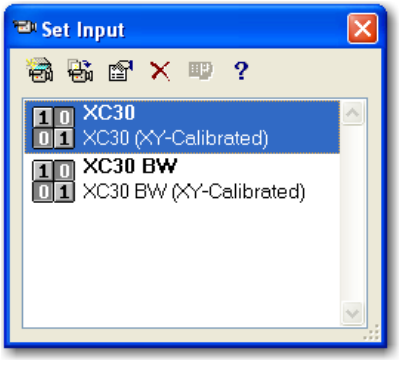
You should always prefer the automatic calibration over a new calibration, when possible.
For example, if you have exchanged an objective after installing the software, you should update your software and select the automatic calibration rather than executing a new calibration.

Enabling the remote control

The remote control needs to be activated.

1) Start the software.
2) Open the Set Input dialog box.
   To do so, select the Image > Set Input... command or simply press the [F6] key.
   ► The Set Input dialog box shows all of the input channels that have been set up.

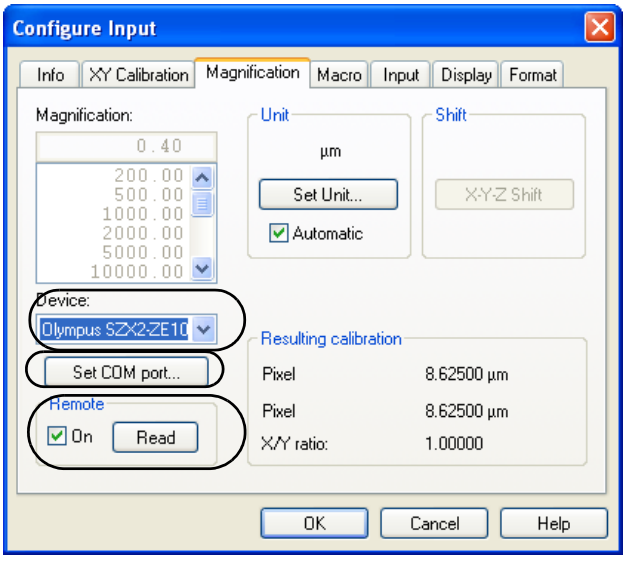
Here you can see that two input channels have been set up: "XC30" and "XC30 BW". The Set Input dialog box shows all of the existing channels. The active input channel is highlighted in blue.



3) Select the input channel to be used for the stereo microscope, for example "XC30".

4) Open the Configure Input > Magnification dialog box.
   To do so, click the Configure Input button or simply doubleclick the selected input channel. In the Configure Input dialog box, activate the Magnification tab.

The Magnification tab in the Configure Input dialog box.



5) From the Device list, select the appropriate entry Olympus SZX2-ZE10 Objective/Zoom Encoder, Olympus SZX2-ZE16 Objective/Zoom Encoder, Olympus SZX2-ZE10 Zoom Encoder, or Olympus SZX2-ZE16 Zoom Encoder.
6) Click the Set COM Port... button and in the Set Remote COM Port dialog box, select the interface for the serial cable "RS232", for example "COM 1".
7) Close the Set Remote COM Port dialog box by clicking OK.
   ► You return to the Configure Input > Magnification tab.
8) Select the On check box located in the Remote group.
   ► The remote control is active.
9) Click the Read button.
   ► For each image, the magnification set on your stereo microscope will be read out by the remote control and displayed in the status bar.
10) Restart your software to adopt your modifications.

Reading out the magnification

1) Start the software.
   ► You will be prompted to set the magnification on your stereo microscope to "0.8".

Setting up the SZX2 Zoom/Objective Encoder

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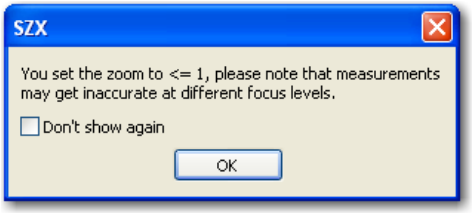
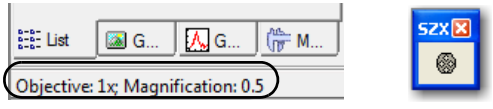
SZX2-ZB16-ZE
SZX2-2RE10-E
SZX2-2RE16-E

2) Select an objective (objective no. 1) by turning the nosepiece.
   ► Objective no. 1 is now located in the light path.
3) Set the zoom magnification to the magnification "0.8" by turning the zoom adjustment knob located on the stereo microscope body.
4) Confirm the message by clicking OK.
   ► The message closes. Another message automatically informs you that measurements can become inaccurate at various focus levels if the zoom magnification is smaller than "1".



5) Close this message by clicking OK. Should you not want this message to appear again, select first the Don't show again check box.
   ► At the lower bottom edge of the user interface, on the left hand side, the status bar shows the objective being used (e.g., 1X) and the current zoom magnification (e.g., 0.8X).
   ► The SZX button bar is active.

The status bar. The active SZX button bar.



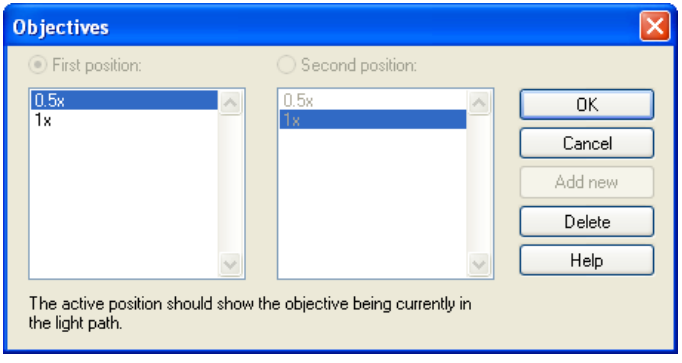
   ► If a Zoom Encoder with no Objective Encoder is going to be used (SZX2-ZB10-ZE or SZX2-ZB16-ZE), the setup is hereby complete. You can now work with your software. Otherwise, please continue reading.

SZX2-2RE10-E
SZX2-2RE16-E

Note The Objectives button bar is not required while working with the SZX2 Zoom/ Objective Encoder. This is why the Objectives button bar is inactive.

6) Click the button in the SZX button bar.
   ► The Objectives dialog box opens.

The Objectives dialog box.



   ► The Objectives dialog box shows which nosepiece position is being used. The First position option is selected. It tells you that the first nosepiece position is being used. The First position list is thus active, whereas the Second position list is inactive.

7) Select from the active list the entry for objective no. 1 to inform the software that objective no. 1 is in the light path.
   ► The entry for objective no. 2 will be automatically highlighted in blue in the Second position list.
   ► At the lower bottom edge of the user interface, on the left hand side, the status bar shows the objective being used (e.g., 0.5X) and the current zoom magnification (e.g., 0.8X).

8) Click OK to close the dialog box.
   ► You can now work with your software.

Deleting / adding an objective

Only two objectives can be defined.

If you want to use another objective with your stereo microscope, you must delete an objective. You can add a new objective as soon as you have deleted the previous one.

1) Open the Objectives dialog box.
2) Select the entry you want to delete from the current list.
3) Click the Delete button. Confirm the message by clicking OK.
   ► As soon as there is only one objective or no objectives defined in the Objectives dialog box, the Add new button is activated.
4) Click the Add button.
   ► The Define objective dialog box is opened.
5) Enter the name of the objective into the Name field.

- ► Enter the magnification of the objective being used into the Magnification field. You can enter the value directly into the field or use the arrows to the right of it.

6) Click OK.
   - ► You return to the Objectives dialog box.
   - ► The two lists in the Objectives dialog box contain the new objective.

In order to be able to work with length calibrated images, you must calibrate the new objective.
You can execute the calibration of the objective by yourself (i.e. interactively). To do so, please read the chapter "Manually calibrating the input channel" on page 21.
However, it is more recommendable to update your software. By doing so, select the new objective magnification in the Automatic XY calibration dialog box (see chapter "Installing the software" on page 5).

Manually calibrating the input channel

When you want to measure on your images (e.g., distances), you must work with images that have been correctly calibrated.

Usually, the input channel has been automatically calibrated during the installation, so that you can directly work with your samples without having to execute a new calibration.

In the following cases you do not have the correct calibration data and therefore you should execute a calibration.

- You are working with a camera by another manufacturer and/or not with a stereo microscope from the "SZX 2" series.
- You are working with a camera by OLYMPUS SOFT IMAGING SOLUTIONS and with a stereo microscope from the "SZX 2" series. But, while installing the software, you have cleared the Automatic calibration for the <camera name> camera check box located in the Automatic XY calibration dialog box.
- You have exchanged an objective after having installed the software.
- You have mounted a new camera.
- The automatic calibration is not exact enough.

Executing a calibration interactively

For a new calibration, you need an object whose length you know, for example a calibration standard for stereo microscopes with a total length of 50 mm. The distance between the scale lines is 0.1 mm.

1) Select the input channel you want to calibrate.
   To do so, select the Image > Set Input... command or simply press the [F6] key. In the Set Input dialog box, select the input channel and close the Set Input dialog box.
   - ► The name of the input channel will be displayed in the status bar.
2) Place the calibration standard on the stage.
3)  Acquire an image of the calibration standard with the selected input channel. To do so, select the Image > Snapshot command.
4) Should the scale bar be displayed in the viewport, hide it by pressing [Shift + F4].

5) Use the Image > Configure Input... command.
You can also doubleclick the input channel's name located in the status bar on the right side.
   ► The Configure Input dialog box will be opened.

6) Activate the XY Calibration tab.
   ► The Magnification field shows the current total magnification. It cannot be edited.

7) Click the Unit... button.
You can define the calibration unit in the Set Unit dialog box.
For example, select "m" from the Basic unit list. Select "µ" from the Scale list.

8) Close the Set Unit dialog box by clicking OK.
   ► You now return to the XY Calibration tab.

9) Define the calibration reference distance on the XY Calibration tab;
in the Calibration length field, define the length of the visible area of your object, e.g., "50000".

10) Now click the Calibrate button.

11) Using the left mouse button, click the first and last scale line of the calibration standard.

12) Click the Save... button.
   ► The Magnification Table dialog box enables you to view and save your calibration data.

13) Select the preset entry in the Magnification Table dialog box and click the Delete button.

14) Click the Add button.

15) Confirm this with OK.
   ► The new calibration has been set up.
   ► The Magnification Table dialog box closes. You return to the Configure Input > XY Calibration tab.

16) Repeat the calibration for other zoom magnifications and/or objective magnifications.

Note The calibration data will be saved for each objective, independent of one another.

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