

DIGITAL VISION
Beam Splitter with Digital Video Camera
and
EPSILON LYRAE
Digital Image Management Software
for CSO ELITE Slit Lamp

Instructions for Use and Maintenance



C.S.O. srl
Badia a Settimo (FI) – Italia

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CONTENTS

General Safety Precautions	2
Brief Description of the Accessory – Uses	2
Ambient Conditions for Use and Storage	3
Installing the Digital beam splitter	5
Digital Camera Handling Precautions	6
Installing the Software	7
1. Getting Started	20
2. Main Window Commands	21
3. Image Format	23
4. Security	24
5. Movies	25
6. Miscellaneous	25
7. Source	26
8. Digital Camera Settings	27
9. Setting the Sharpness	28
10. Image Gallery Management	28
11. Inserting a New Patient and Adding a New Examination	30
12. Patient List Options	31
13. Exporting a Patient	31
14. Rapid Patient Export	32
15. Importing a Patient	33
16. Deleting a Patient	34
17. Deleting an Examination	34
18. Deleting a Single Image	34
19. Working with Existing Patient Data	35
20. Viewing a Video	37
21. Zoom	39
22. Importing Images into Examinations	39
23. Exporting Images	41
24. Capturing Images and Video Sequences	42
25. Displaying Images in the Gallery	43
26. Processing Environment	44
a) Calibration	
b) Measurement	
c) Drawing	
d) Image Processing	
27. Comparing Images	49
28. Manual installation for Mega digital camera drivers	50
Routine Maintenance	54



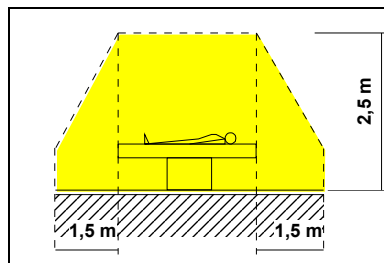
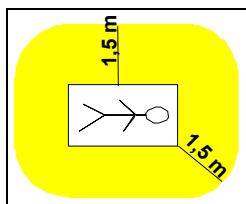
General Safety Precautions

The DIGITAL VISION separator with digital video camera and the EPSILON LYRAE digital image management software for slit lamps constitute a high-performance instrument. In order to use it efficiently and in complete safety we recommend reading this manual carefully before installing the instrument and heeding all the safety warnings in the instruction manual and on the instrument labels.

- Do not perform any repairs or maintenance work on the instrument or the electrical system beyond what is explained in this manual.
- Do not use the instrument near water and be careful not to spill liquids on any part of it. Avoid damp and dusty locations and locations subject to brusque changes in temperature and humidity.
- Disconnect the instrument from the mains supply before cleaning and/or disinfecting.
- ***The equipment neither generates nor receives electromagnetic interference when used in proximity to other devices. Consequently, no protective and/or corrective measures need be taken.***
- During normal operation of the instrument, the distance between it and the computer must be greater than the minimum safe distance (1.5 m) as required by international standard EN 60601-1-1 “Collateral Standard: Safety Requirements for Medical Electrical Systems” Variant / A1 - Feasible Solutions – Code P referred to BBB6 - Electrical Medical Device without Patient Connection and PC Outside of Patient Area.” In any case, we recommend powering the entire setup through an isolating transformer **The transformer is indispensable in cases in which it is difficult for the user (especially in operating room applications) to keep the PC outside of the patient area.**

Brief Description of the Accessory – Uses

The products that are the subject of this manual and the relative attachments are electrical medical devices and therefore “medical devices.” The **DIGITAL VISION** separator with digital video camera is an accessory for the SL 980 and SL 990 slit lamps that permits capturing and processing digital images from stereo microscopic observation of the eye.



Patient Area

The accessory is designed for use by ophthalmologists and opticians (each within his professional competence) for conducting specific ophthalmologic diagnostic studies and producing and storing photographic and video documentation of same. It also permits associating a series of images taken in successive visits with the patient data base, in such a manner as to document the evolution over time of any pathology or condition.

The product also offers the following advantages:

- Very small size
- Easy-to-use software
- High quality images and videos.

The instrument is composed of:

Digital Vision separator, including:

1. Optical separator
2. Digital video camera
3. FireWire cable
4. Instrument base connection cable (for image capture)
5. CD containing the Epsilon Lyrae management software, complete with use license
6. This instruction handbook.

AUXILIARY EQUIPMENT AND ACCESSORIES:

7. Standard personal computer, compliant with international safety standard EN 60950, purchased by CSO and not modified.
8. 230V –230V isolating transformer (leakage current limiter) for operating room use, compliant with international safety standard EN 60742.

Ambient Conditions for Use and Storage

As long as the separator remains in its original packing it may be exposed to the environmental conditions listed below, for a maximum of 15 weeks during shipping and warehousing, without suffering damage.

*Temperature between -10 °C and +60 °C,
atmospheric pressure between 500 hPa and 1060 hPa, and
relative humidity between 10% and 90%.*

Ambient conditions for operation are, instead:

*Temperature between +5 °C e +45 °C;
atmospheric pressure between 700 hPa and 1060 hPa, and
relative humidity between 30% and 75%.*

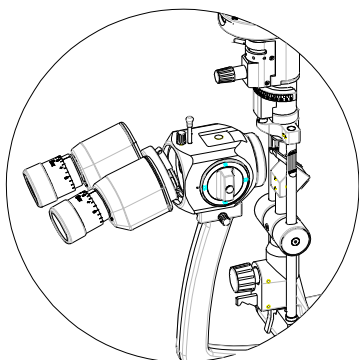
CAUTION



- In advance of an observation of each patient, wipe the foreheadrest and chinrest with a clean cloth. Moreover, remove one chinrest paper for each patient if a bunch of the chinrest papers is fixed on the chinrest. If necessary, wipe the foreheadrest and chinrest using a cloth dampened with rubbing alcohol.
- Set alight intensity as low as possible. The light intensity depends on the slit lamp settings such as voltage of illumination lamp, slit length, slit angle, selection of the filters and illumination time. High light intensity may cause thermal and photochemical damages onto the patient's retina.

Installing the Digital Beam Splitter

*Dear Customer,
welcome to the CSO Epsilon Lyrae Digital Vision System.
To correctly install the instrument and the software please read carefully the following procedure.*



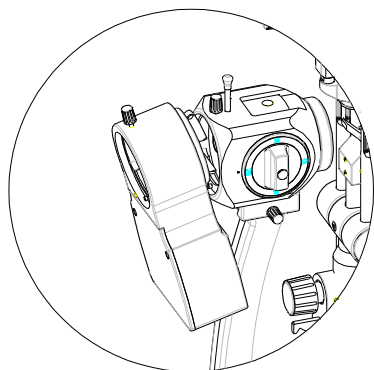
Step 1: Disassemble the binocular eyepiece.

Unpack the slit lamp. Unpack the personal computer (if supplied). Unpack the monitor and the keyboard (if supplied). Assemble and connect the slit lamp (refer to the enclosed slit lamp manual). Position the slit lamp on its top

Connect the slit lamp cables as for its standard use (refer to the *CSO Slit Lamp User Manual* for these connections)

Connect the keyboard and the monitor to the PC

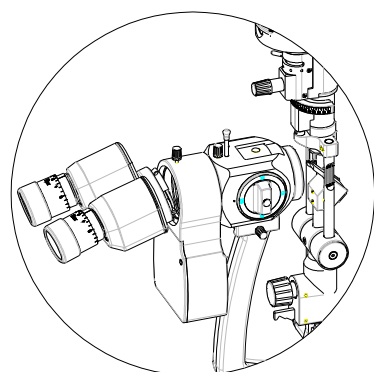
Plug in the power cable for the electric table, the slit lamp, the PC and the monitor



Step 2: Insert the separator.

Assemble the separator as shown in the figures on the left (steps 1 through 3).

Plug the 4-pole connector into its socket on the base of the instrument

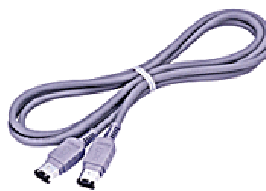


Step 3: Replace the binocular eyepiece

and plug the 4-pin connector to the socket on the bottom of the digital camera.



With the PC switched OFF, connect the FireWire cable



to the digital camera



and the port on the rear of the computer.
Switch on the PC, the monitor, and lastly the slit lamp. The digital camera has no switch since it is powered through the FireWire cable.

Warning: the software will not run with video resolution less than 1024 x 768 pixel.

Warning: the FireWire digital camera requires an auxiliary 12V DC power supply if the software is installed on a portable computer.



**The auxiliary power supply must be the “medical” type and its output must meet the have the following specifications:
12V DC – 2.50 A – 30W max**

Digital Camera Handling Precautions

DO NOT touch the sheath of the camera cable connected to the computer and the line ground terminal at the same time.

Use only DC power supplies with isolated containers. This type of power supply is identifiable by the fact that it has only TWO power connectors.

Although the IEEE-1394a standard digital interface features plug and play functions, the physical ports may be damaged by ESD (electrostatic discharge) phenomena if connected when the power supply is active.

CONNECT THE DIGITAL BEAM SPLITTER TO THE FIREWIRE CABLE ONLY WHEN THE SOFTWARE IS NOT RUNNING.

It is good practice to bring the metal parts (that is, the FireWire cable sheath and camera housing) into contact before inserting the connector in the camera. The same should be done with the computer housing before inserting the connector into the FireWire port on the computer. This precaution guarantees that any electrostatic charge will be safely discharged to ground. If you are not experienced with these technologies or if you are not fully informed as regards system connections, we strongly recommend switching off all the equipment before connecting or disconnecting the camera.

Installing the Software

Before installing the Epsilon Lyrae software on the PC, check that your system is suitable for using the program.

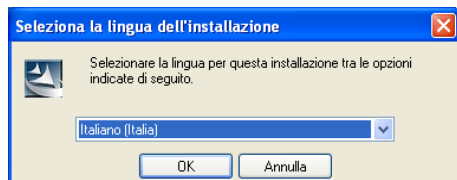
1. *Windows 2000 or Windows XP operating system. Note: Windows 2000 requires installation of Service Pack 4. Internet Explorer 6 must be installed*
2. *Attention: Close any antivirus or firewall programs installed on your system. These may be relaunched when installation is completed.*
2. *Check that your computer meets the requirements listed at the end of this manual.*
3. *The Windows user performing installation must hold Administrator rights.*

You must perform FIVE basic operations before you can use the Epsilon Lyrae software:

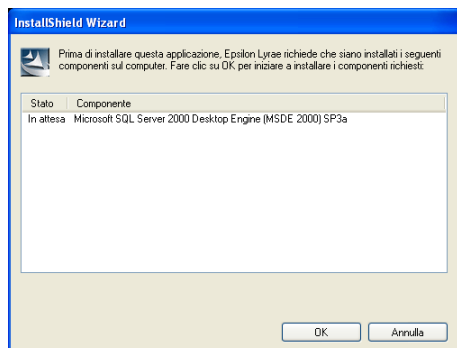
1. *install the Epsilon Lyrae software*
2. *install the CODECs required for viewing the videos*
3. *create the database for storing patient data and images*
4. *expand the database*
5. *install the digital camera drivers*

STEP 1: INSTALLING THE SOFTWARE

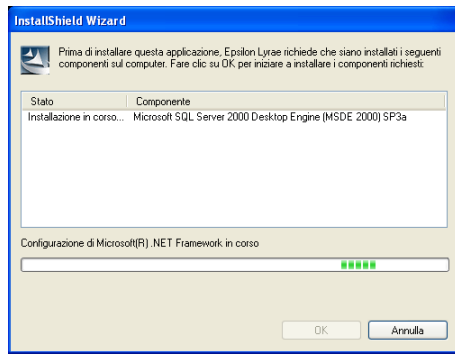
1. Insert the CD and select the language for installation:



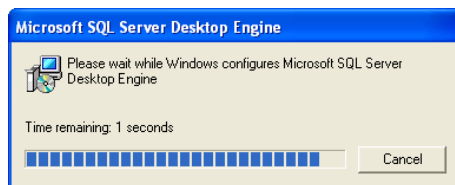
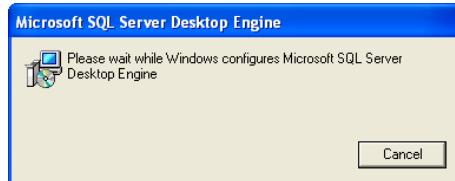
2. Automatic setup will install the Microsoft SQL Server Engine; click OK to continue.



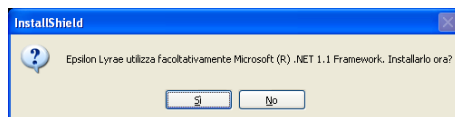
Wait until the procedure completes.



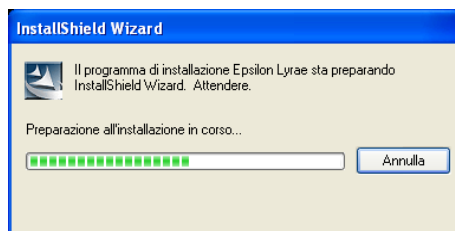
The software will be installed automatically:



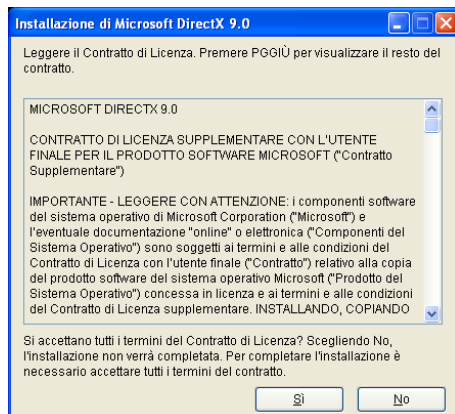
3. The software will now install Microsoft NET Framework version 1.1.



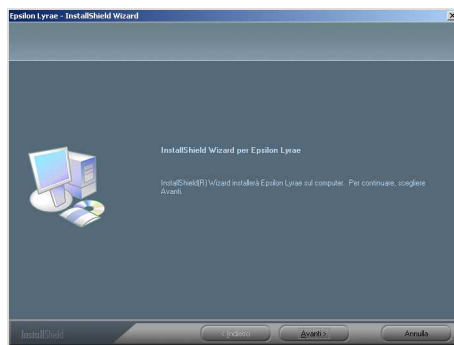
Click YES and wait:



4. Microsoft DirectX 9.0 will be installed next;
5. click YES to accept the license contract:

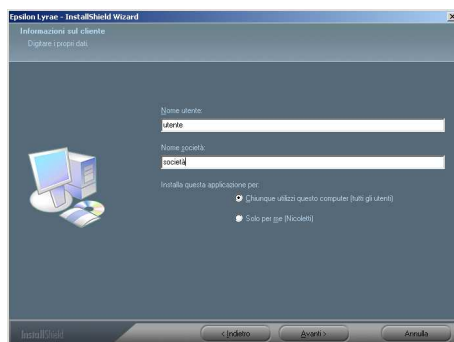


6. At this point the Epsilon Lyrae software will be installed:

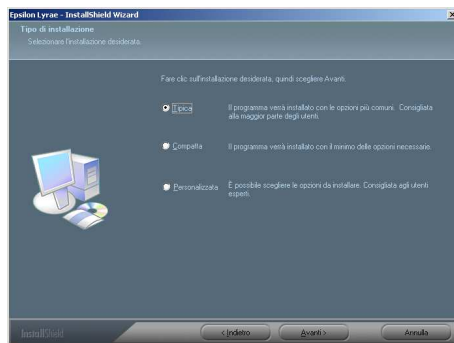


Click NEXT.

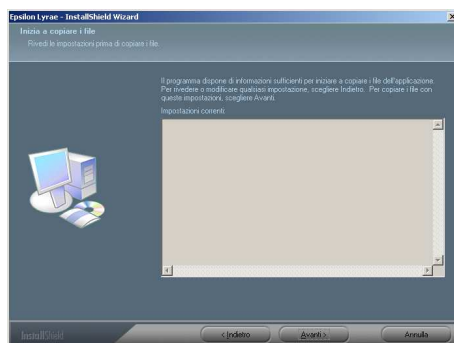
7. Type in the USER NAME and COMPANY; click NEXT.



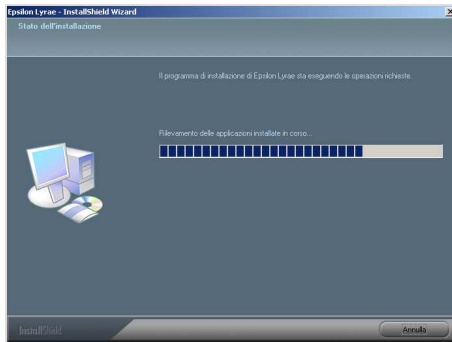
8. Select “Typical Installation” and click NEXT.



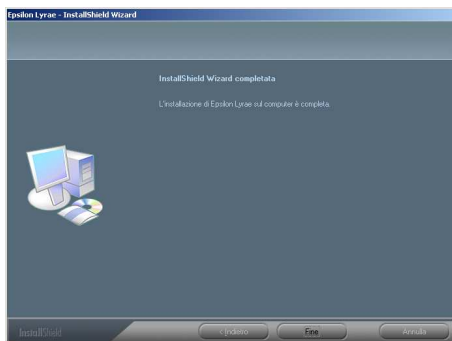
9. The installation software will begin copying the program files:



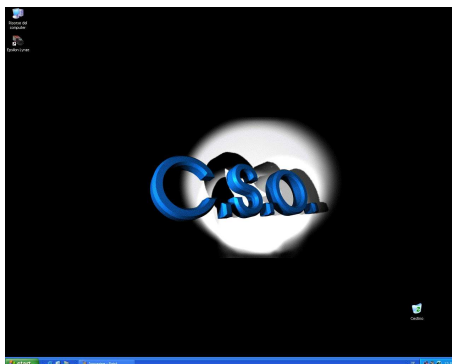
10. Click NEXT.



11. When installation is complete, click END.



12. The “Epsilon Lyrae” icon will appear on the desktop:



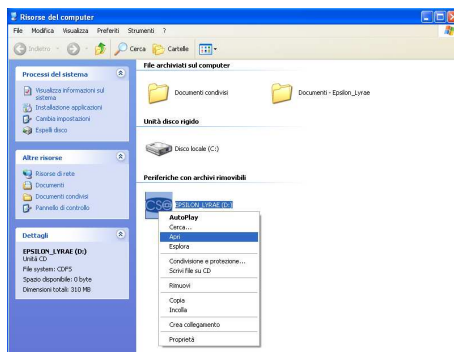
13. We recommend restarting your PC to apply the changes.

STEP 2: INSTALLING THE CODECS FOR VIEWING THE VIDEOS

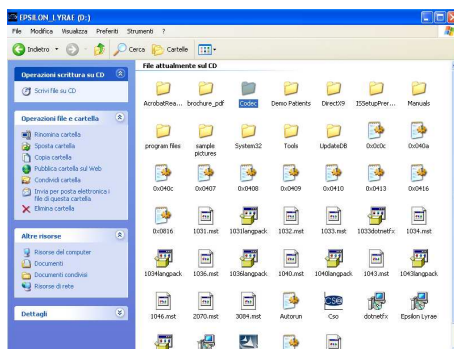
1. On the START menu, click MY COMPUTER.



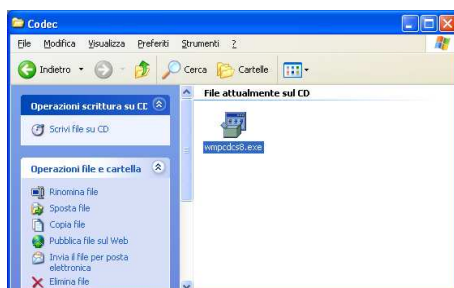
2. Select the “EPSILON LYRAE” icon and right-click. Select OPEN.



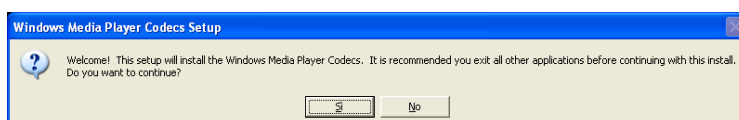
3. In the CD, select the CODEC yellow folder; click on the folder to display the contents.



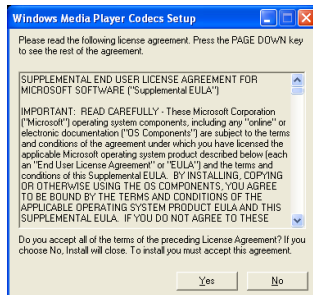
4. The folder contains a single file called “WMpdc8s”; double-click to open.



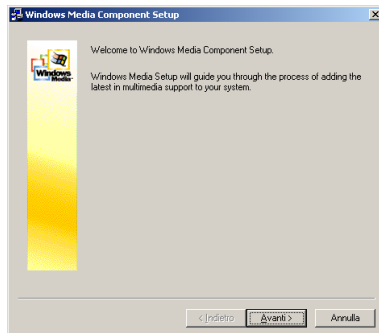
5. The software will automatically install the CODECs.



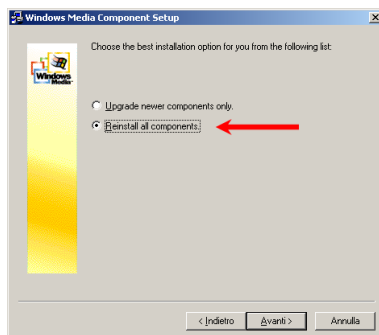
6. Click YES to accept the Microsoft license contract.



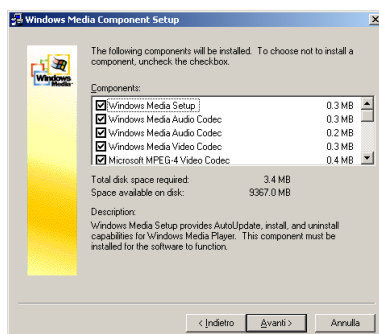
7. Click NEXT.



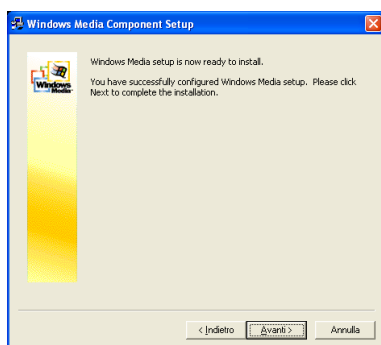
8. If requested, select “Reinstall all components” and click NEXT.



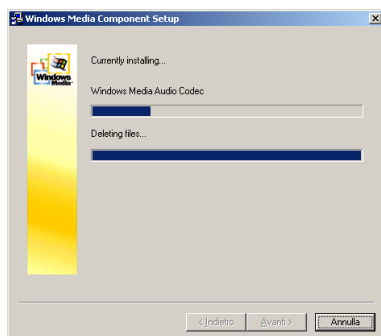
9. All the CODECs needed to display the videos will be installed.



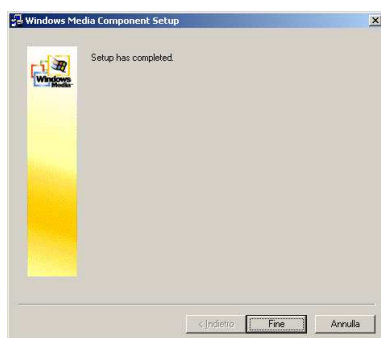
10. Click NEXT again.



11. Wait until installation completes.



12. When installation is complete, click CLOSE.



The CODECs are now installed.

STEP 3: CREATING THE DATABASE FOR STORING PATIENT DATA AND EXAMINATION IMAGES

Warning

To permit use of the Epsilon Lyrae software by users different from the system administrator, proceed as outlined below:

- Install the application with the Administrator as user through step 2.
- Open Windows under the name of the user who will be using the Epsilon Lyrae software.
- Continue with installation from step 3 to end.

If the user who will be using Epsilon Lyrae does not hold Administrator rights, he/she must be added to the Windows "Power Users" group.

At this point it will be necessary to create the database in which the software will store all the patient data and relative examinations.

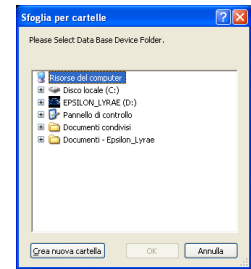
1. Double-click the desktop icon to open the Epsilon Lyrae program.

The software will request that the user select a folder in which to create the database.

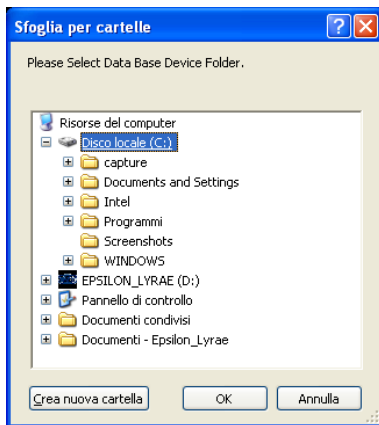
Attention: select this directory with care, since it will not be possible to move it or rename it in the future.

Attention: The software will not operate if the folder is created on the desktop.

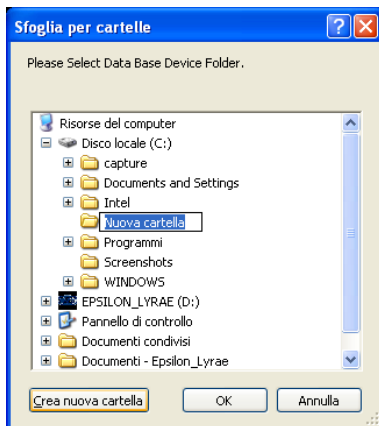
2. To select a folder, first select MY COMPUTER.



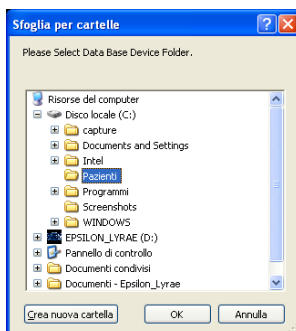
3. Then select LOCAL DISK (c:)



4. Click on “CREATE NEW FOLDER” on the lower left.



5. Name the new folder; for example, “PATIENTS”

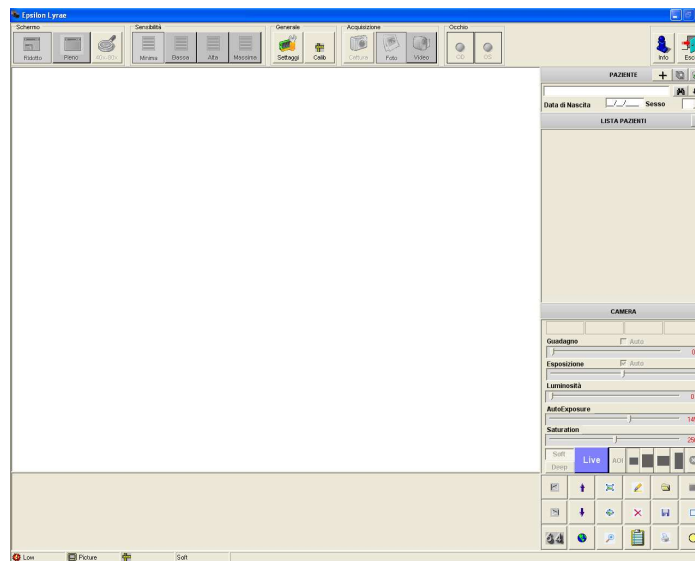


6. Click OK to proceed.

7. A window will open to inform the user that the database is being created. Database creation is fully automatic; wait for the operation to complete.



8. When database creation is complete, the software will launch automatically and display the main window:

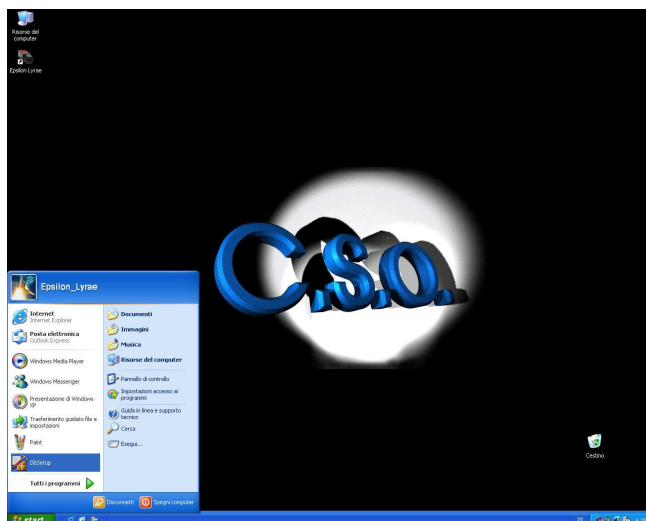


9. Click ESC on the upper right.

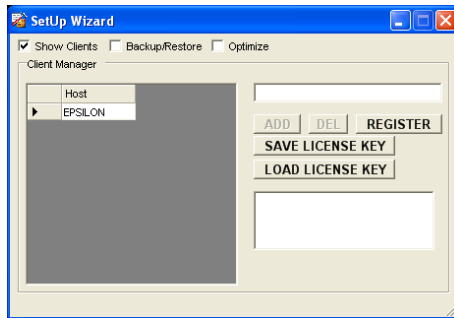
STEP 4: EXPANDING THE DATABASE

The next step is to expand the database to set aside sufficient space for future work.

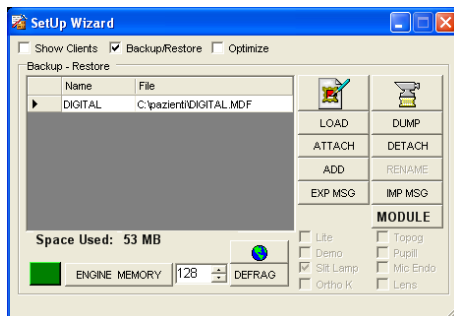
1. Click DBSETUP on the START menu.



2. The following window will open:



3. Select BACKUP/RESTORE:

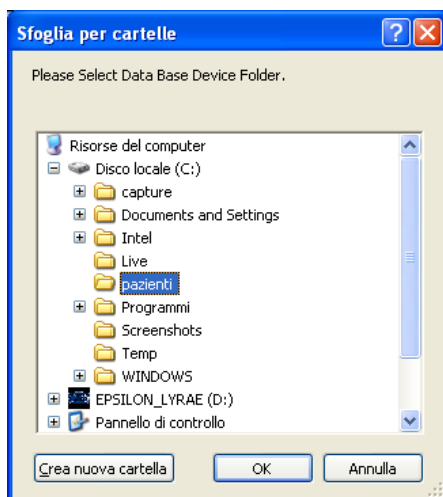


Note that the center text box displays a filename and the folder in which it resides. The database file is called DIGITAL.MDF and is found in the c:\patients folder.

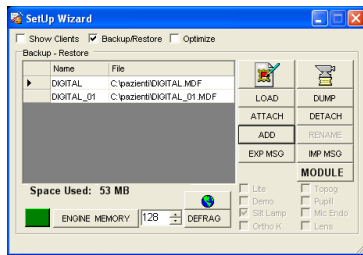
4. The database must be prepared to hold a large quantity of data and images.

To do so, click ADD:

The BROWSE FOLDERS window will open. Select the SAME folder in which the database was created; that is, the "patients" folder.

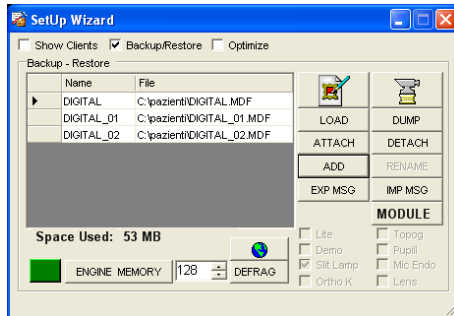


5. Click OK. The software will take a few minutes to create the extra space; when the operation is completed, the window will read:



Note that we now have an additional database file named DIGITAL_01.MDF.

6. Repeat the operation.



Upon completion, the filename DIGITAL_02.MDF will also be displayed.

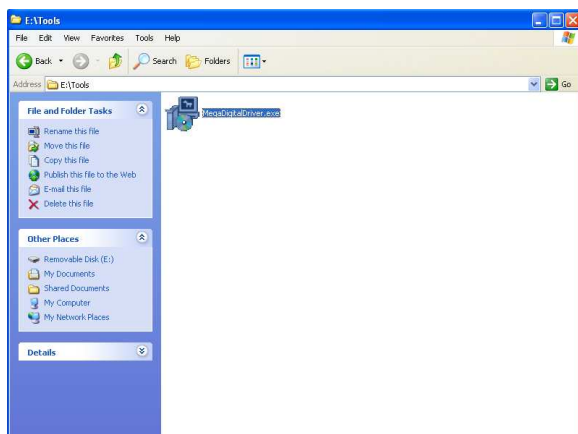
7. Click the red X in the upper right-hand corner to close DBSETUP.

STEP 5: INSTALLING THE DIGITAL VIDEO CAMERA DRIVERS

Warning: if the automatic installing procedure is not successfully finished, please refer to Chapter 28 for the manual installation.

Please connect the MEGA digital beam splitter to the PC by using the firewire cable.

1. into the CD open the folder "Tools"

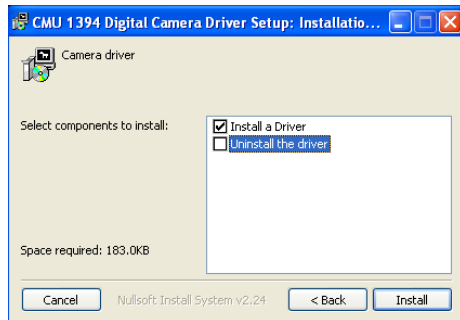


2. double click on "MegaDigitalDriver.exe"

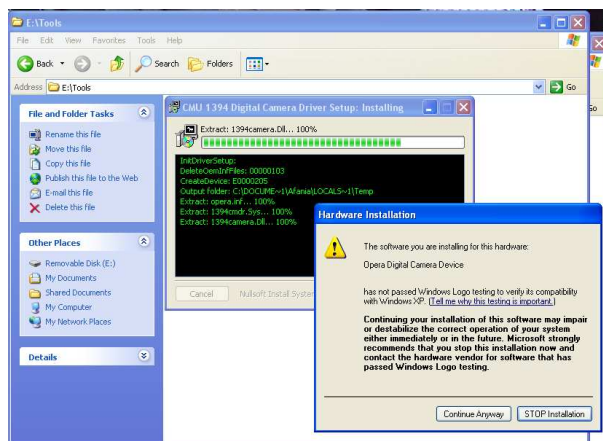
3. a new window will appear asking to accept the user license for drivers; check the box "I accept the terms in the License Agreement" and click on NEXT



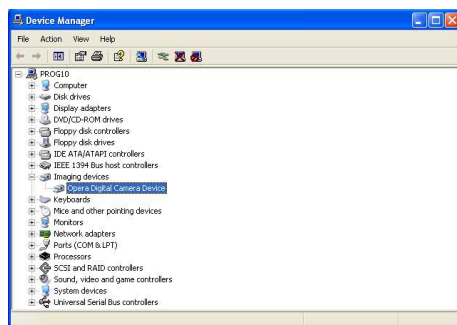
4. select “install a driver” and then INSTALL:



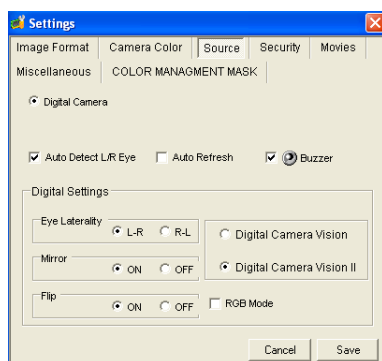
5. then click on “continue anyway” and wait until the installation is finished:



6. to check that everything was correct, click with the right button on “My computer” → “Properties” → Device manager. The “OPERA digital camera device” should appear correctly without any conflict.



7. RUN the software, select SETTINGS menu on the top bar. Select SOURCE and check the device “Digital Camera Vision II”.



Click CONTINUE to continue.

Epsilon Lyrae is ready to use as soon as installation completes!
Restart the PC.

To run the Epsilon Lyrae program, double-click the EPSILON LYRAE desktop icon.

Tips:

Before updating the application or the files, and/or in any case before performing any maintenance, make a BACKUP copy of the database.

We also suggest making backup copies of the database files at least once a week on a support different from that normally used (for example, on CD-ROM or DVD).

CSO Srl declines any and all responsibility for loss of data attributable to improper manipulation of the database files.

All the trademarks are properties of their respective owners.

Instructions for Use

1. GETTING STARTED



Welcome to Epsilon Lyrae, CSO's digital video camera management software.

Epsilon Lyrae is a program for capturing high-quality still images and videos from slit lamps. The software allows the user to manage a patient database and process the slit lamp images.

Epsilon Lyrae can be easily integrated into a CSO software package that can contain all the software needed for capturing and processing topograph and pupillograph data and images as well. The software described in this instruction booklet is designed for use with slit lamps.

To start the program, follow the Windows Start menu:

Start → Programs → CSO → Epsilon Lyrae → Epsilon Lyrae.

When the software starts, it will automatically recognize the connected digital camera.

The MEGA digital beam splitter has four buttons on its back panel.



The SHUTTER buttons, if both pressed, change from Manual Shutter to Auto Shutter and from Auto Shutter to Manual Shutter.

In Manual Shutter mode, they are useful to increase (▲) or decrease (▼) the shutter value.

The PHOTO/VIDEO button changes from PHOTO mode to VIDEO mode and viceversa.

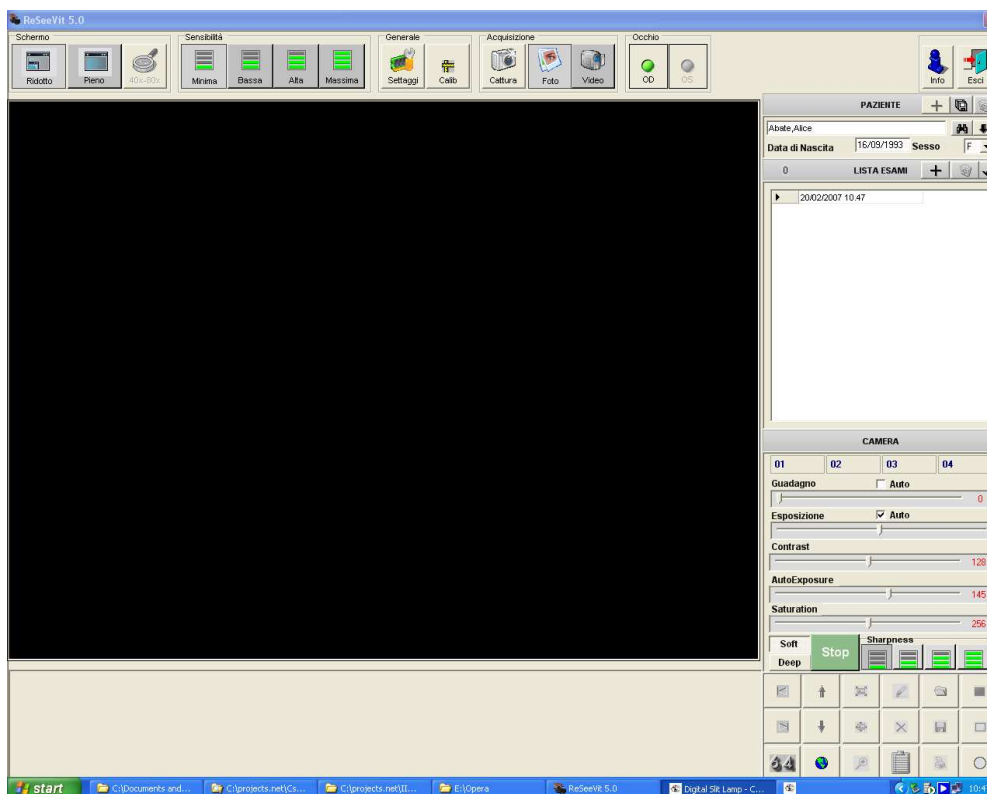
The REGS button toggles between the four different user defined configuration (if they were previously defined).

From the main window, you can manage the patient and examinations data files as well as capture and process images

When the software is launched, it automatically identifies the digital video camera to which it is connected.

2. MAIN WINDOW COMMANDS

The main window is illustrated below:



The Info icon is on the upper right. Click this icon for information on the current software version:



The top part of the window contains a toolbar:



Screen Options



The left-hand button adapts the software for a standard-size window, while the right-hand button runs the application at full-screen size.

40x-80x Zoom



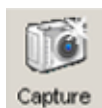
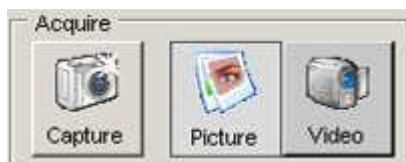
The zoom function is active only in the FULL SCREEN mode.

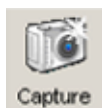


Sensitivity (Speed)



The device maybe set for four sensitivity levels: Minimum, Low, High, and Maximum. The Minimum (default) level is suitable for the majority of slit lamp configurations. In particularly difficult cases (for example, patients with dark eyes) it maybe advisable to use the Maximum level, but only with 40x zoom configurations.

Capture Menu



Click the first button  to take a snapshot during the capture session; select the second button  to run the software in the "photo" mode, and select the third  to open the "video" mode option.

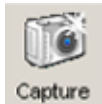
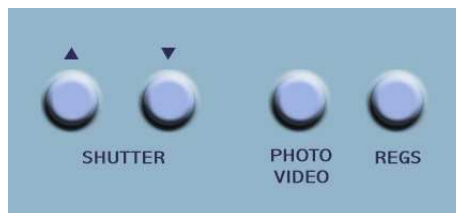
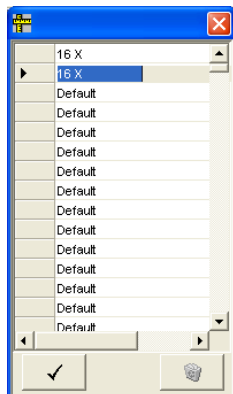
If the "video" mode is selected, video recording will begin as soon as the  icon is clicked.

PHOTO and VIDEO modes can be selected from the PHOTO/VIDEO button on the beam splitter panel.

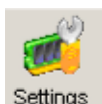


Calibration



If calibrations have been created, the **Calib** button may be used to associate a calibration with an image when working in the LIVE mode. Clicking the button opens the window shown on the left; select a calibration from the list and click the check ✓ button on the bottom left to associate the calibration with the current image.

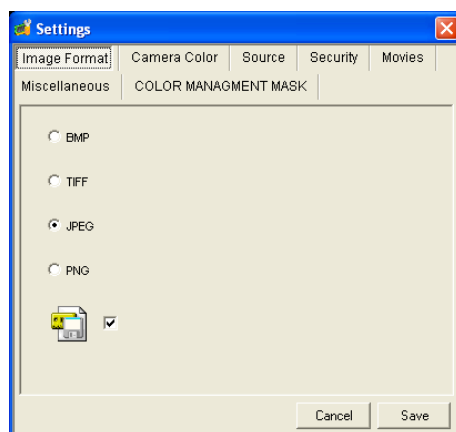
Settings



Click the **Settings** button to display the software settings. This menu gives access to four more folders (currently available only in English).

3. IMAGE FORMAT

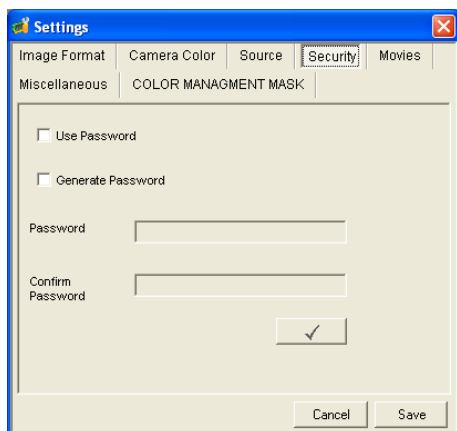
You may select the format for saving the images among the most common graphics formats.



Remember that a figure saved in .bmp format occupies about 4.68 MB; in .jpg format, 77 KB ca.; in .tif format, 2.60 MB ca.; in .gif format, 410 KB, and in .png format, 2 MB ca.

4. SECURITY

Access to the software is controlled from the “security” folder Use of a password may be enabled or disabled.



If the “Use password” option is selected, the software will request that the user type in a password at program launch.



At program launch, the program will request that the password be entered.



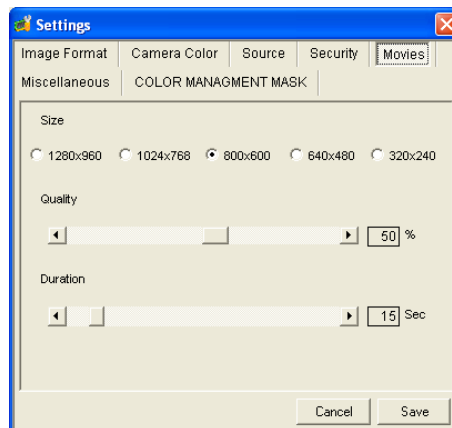
To permit free access to the software, disable this option.

To create and apply a new password, select “Generate password” and type in the password twice in the boxes for that purpose.

Click ✓ and then save.

5. MOVIES

Selecting the MOVIES item allows the user to select the video format, resolution, and duration.



The length may be from 15 seconds to 3 minutes.

6. MISCELLANEOUS

The MISCELLANEOUS menu allows the user to customize:

- the network settings
- the start window title
- the main window title
- the program language

For network settings:

- *Stand Alone*: select this option if the image database is not held on a server.
- *MSDE Client*: select this free option to exploit the network connection capabilities of the software.
- *MS SQL Client*: select this option to use Microsoft SQL Client, which must be purchased separately.



In the *DB Server Name* line, insert in accordance with the NETBIOS protocol (which must be installed on the machine) the name of the PC that acts as a server for the database files. Alternatively, enter the IP address.



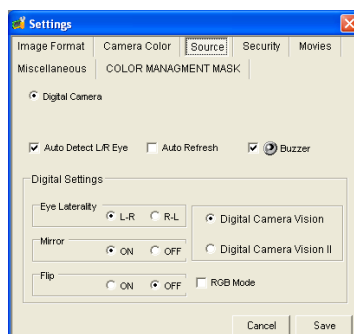
The title of the start window and the title of the main window maybe customized by the user. This window permits selecting the program language, which will be applied when the software is restarted.

The user may select the background displayed when the software is launched. Any image used must be named Logo.jpg and must be stored in the same folder as the program files.

Normally, the folder is `c:\programs\cso\epsilon lyrae\`

7. SOURCE

The SOURCE folder contains the settings for the capture source.

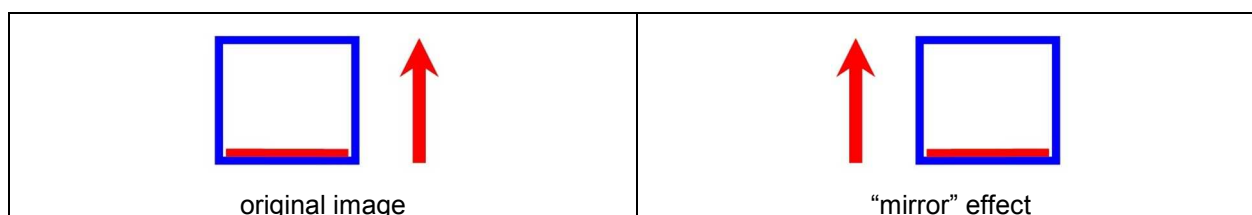


- AUTO DETECT L/R EYE: applies the automatic right/left eye detection option. If the “Auto Detect L/R Eye” is enabled, the software will automatically recognize the right eye (R) and the left eye (L) and mark each acquired image as L or R.
- AUTO REFRESH: enables automatic refresh of the image gallery.
- BUZZER: enabled by default. If selected, the software uses the PC buzzer for audible signals; if deselected, the software will use the sound card.

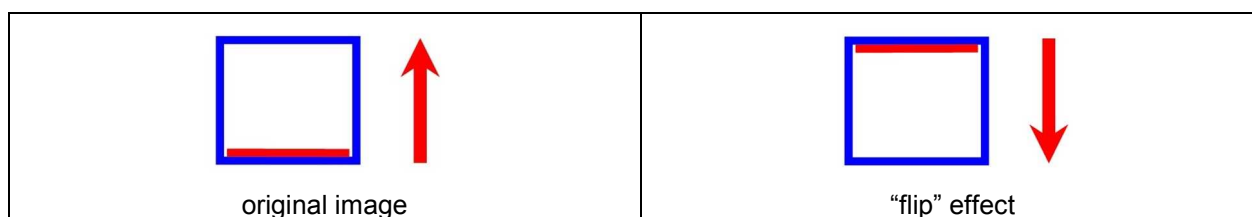
This window offers two further options that are useful in the case that the slit lamp uses a non-standard optics system:

EYE LATERALITY: permits inverting right eye/ left eye.

MIRROR: if applied, flips the image right to left.



FLIP: if applied, flips the image upside down.



- DIGITAL CAMERA VISION : select when using a SL990/SL980 Digital Vision slit lamp.
- DIGITAL CAMERA VISION II : select ONLY when using an SL990 ELITE slit lamp.
- RGB mode (option available only for SL990 ELITE): the default mode is "YUV 4:2:2" at 11 frames per second. If the RGB option is selected, the image is processed with no compression, at 7 frames per second. This option can be useful - for example - for corneal endothelium capture.

8. DIGITAL CAMERA SETTINGS

The camera GAIN and SHUTTER parameters are controlled from this panel. If AUTO is selected, the software will adjust these parameters automatically.

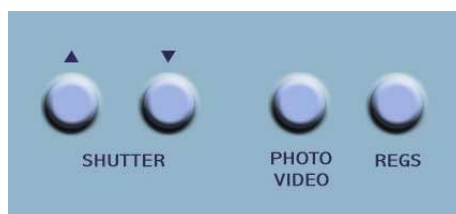


AutoExposure parameter shows the mean brightness level on the actual picture. In AUTO mode, the digital camera tends to adjust the GAIN and SHUTTER values to the aim of achieving the AutoExposure requested value.

The SOFT and DEEP buttons allow the user to control the image color in different lighting conditions.

For example, at high enlargements, the DEEP button may be used to produce deeper colors and enhance contrast in greatly enlarged images.

Four different user configurations can be saved with customized values for the camera. The user can recall each of these configurations by clicking on the REGS button on the panel of the beam splitter.



The user may create and save four different camera setting configurations. Each of these configurations may be later applied by clicking a button on the panel.

To create a new configuration:

- Enter the capture (LIVE) mode.
- Move the cursors to select the correct GAIN and SHUTTER values.
- Select SOFT or DEEP mode.
- Right-click a free configuration button.



Type in a name for the configuration to be saved and click OK.

It will now be possible to recall the saved configuration from the LIVE environment by simply clicking the relative button. The camera will be adjusted to the settings associated with the button.

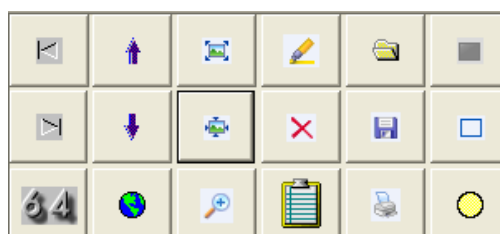
9. SETTING THE SHARPNESS

The SHARPNESS parameter is useful to achieve the optimal control on the definition level of picture details. When high magnification factors are used, it is possible to increase the SHARPNESS value to detect very tiny details (for example, corneal endothelium).





















10. IMAGE GALLERY MANAGEMENT

The lower portion of the main window contains buttons having numerous functions that are applicable to the images and the gallery:



buttons features and keystrokes are shown in the following table:

Icon	Function	Keystroke
	Display the gallery images, beginning with the first.	⌂ (Home)
	Display the latest images in the gallery.	Fine (End)
	Display the gallery in full-screen format.	-
	Display the 6 previous gallery images.	Pag↑
	Display the next 6 gallery images.	Pag↓
	Refresh the gallery.	F5
	Display the image in real size.	-
	Adapt the image to the window.	-
	Enlarge a detail of the image.	-
	Access the limited processing environment.	-
	Eliminate the selected image.	Del
	Write information concerning the selected image.	F1
	Import an image to the gallery from an external file.	-
	Save the current image in the gallery.	-
	Print the current image.	F4
	Display images in the gallery exposition.	F2
	Eliminate all the images selected for exposition	-
	Insert/eliminate an image for gallery exposition	Double click

11. INSERTING NEW PATIENT AND ADDING A NEW EXAMINATION

The CSO Epsilon Lyrae software can capture images and videos. If the "auto detect L/R eye" option is selected in the SOURCE folder on the SETTINGS menu, the software automatically associates the right or left eye with every image acquired. To capture an image, simply press



the button on the slit lamp joystick or click the "Capture" icon.

To insert a new patient, click the "+" icon.

PATIENTS LIST			
▶	AAA	PROVA	11/05/1965 M
	Black	Simon	23/07/1954 M

A new window will open.

Type in the last name, first name, date of birth, and sex of the patient.
Click OK.

Click the "+" icon to the right of the EXAMS LIST.

EPISODE LIST			

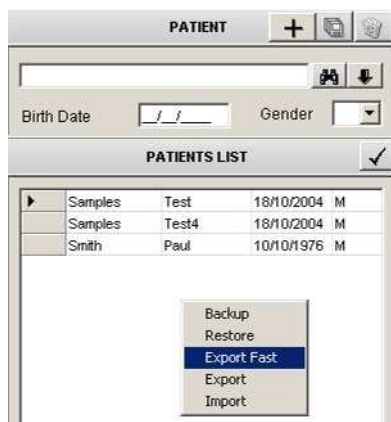
The current exam is indicated by a black cursor symbol on the left.

EPISODE LIST			
▶	08/09/2004 11.39		

The software memorizes the patient data in two files (not accessible by the user) saved in the folder selected during the *DBSetup* procedure.

This patient folder contains two files: *digital.lbf* and *digital.mdf*. These files contain all the data and examinations relative to your patients.

12. PATIENT LIST OPTIONS



The PATIENT LIST offers several options for patient/examination management.

Right-clicking in the PATIENT LIST window will open a short menu:

Backup: makes a copy of all the patients; ALL the patients will be stored in a compressed .zip file.

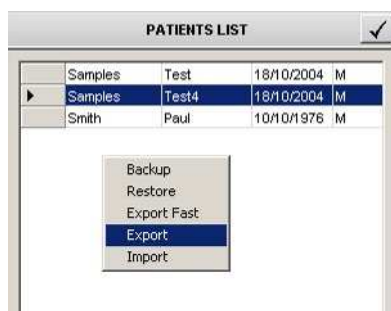
Restore: restores data from a backup file.

Rapid Patient Export: exports the CURRENT patient (with ALL the relative examinations) and saves the data in a .zip file.

Export: opens the EXPORT window, in which the user may select patients and examinations to export.

Import: opens the IMPORT window, in which the user may select patients and examinations to import.

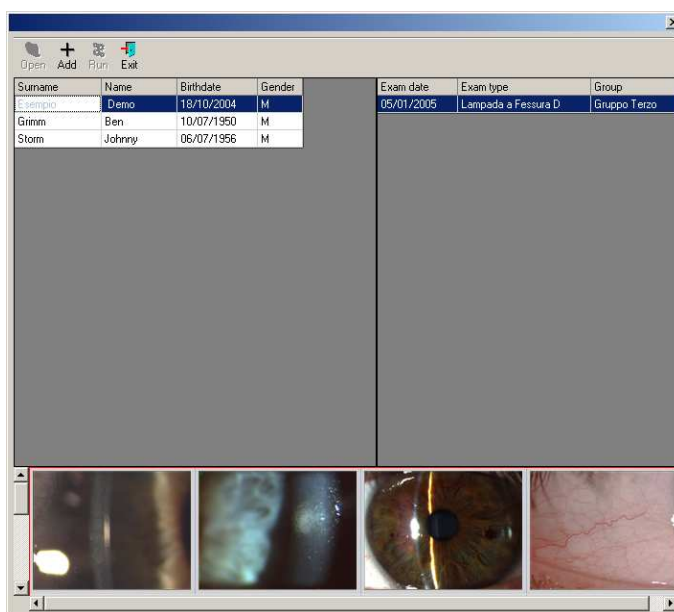
13. EXPORTING A PATIENT



To export one or more patients, right-click in the PATIENTS LIST window and select EXPORT.

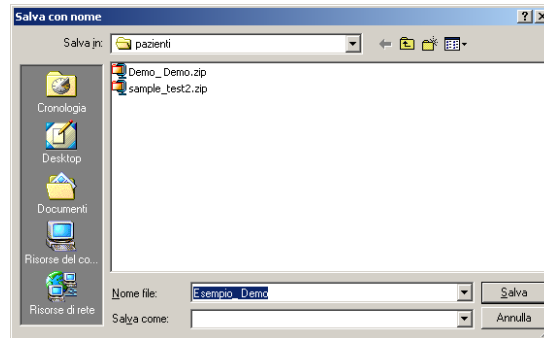
A new window will open and the linked examinations for the selected patient will be listed in the right-hand portion of the window.

After having elected the patient and the examination to be exported, click ADD "+":





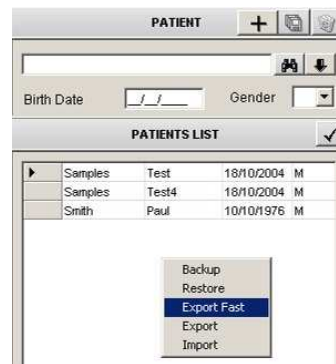
Click RUN and select the folder to which to export the patient. Type in the name of the file in which to save the patient and click SAVE.



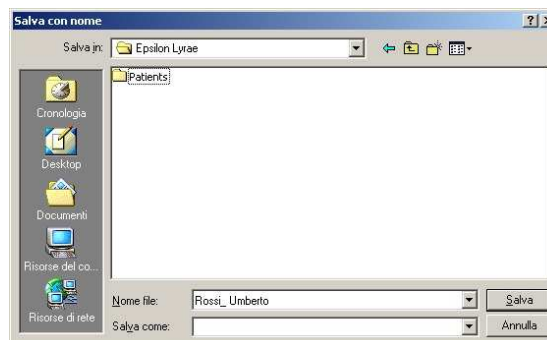
The patients will be exported to compressed .zip files.
To export more than one patient, click “+” for each patient.

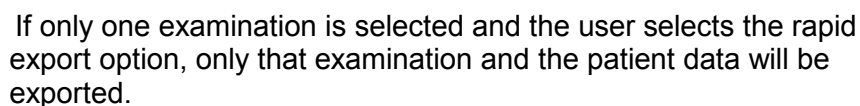
14. RAPID PATIENT EXPORT

The program includes a rapid export option. This option does not allow the user to select the patients or examinations to be exported, but acts on the current patient only.

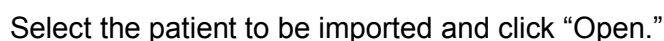


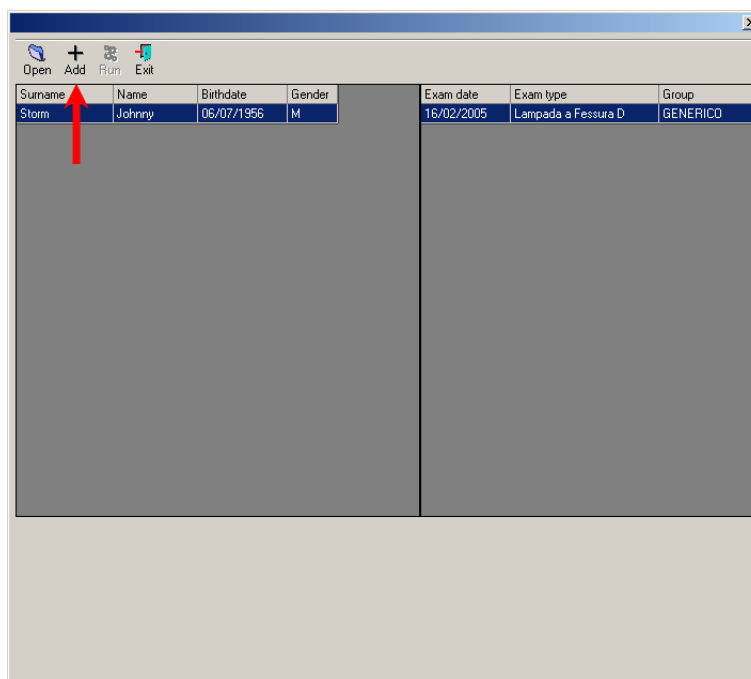
If a patient is selected and the user selects the rapid export option, ALL the examinations and patient data will be exported to a file of the type: *lastname_name.zip*.



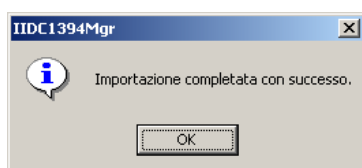


To import one or more patients, right-click in the PATIENT LIST window and select IMPORT.





The patient name will be highlighted in blue. Click ADD and then RUN. When the procedure is completed, the following message will be displayed:



To import more than one patient, click “+” for each patient to be imported.

16. DELETING A PATIENT

To delete a patient from the database, open the patient file and click on the “Recycle Bin” icon to the right of the name. The program will request confirmation before deleting the patient.

17. DELETING AN EXAMINATION

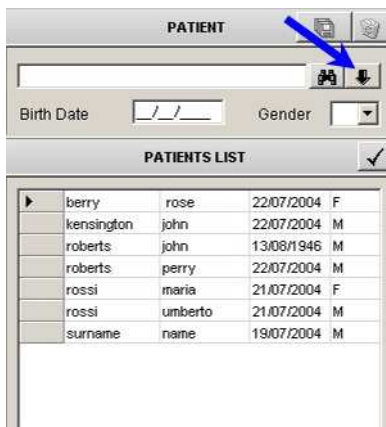
To delete an examination, open a patient file, select the examination to be deleted, and click on the “Recycle Bin” icon to the right of the EXAM LIST.


The program will request confirmation before deleting the examination.


18. DELETING A SINGLE IMAGE

To delete a single image from an examination, first open the examination containing the image to be deleted. Position the cursor on the image to be deleted from the gallery and right-click. Select “Delete.” *Attention: the program does not request confirmation before deleting a single image.*

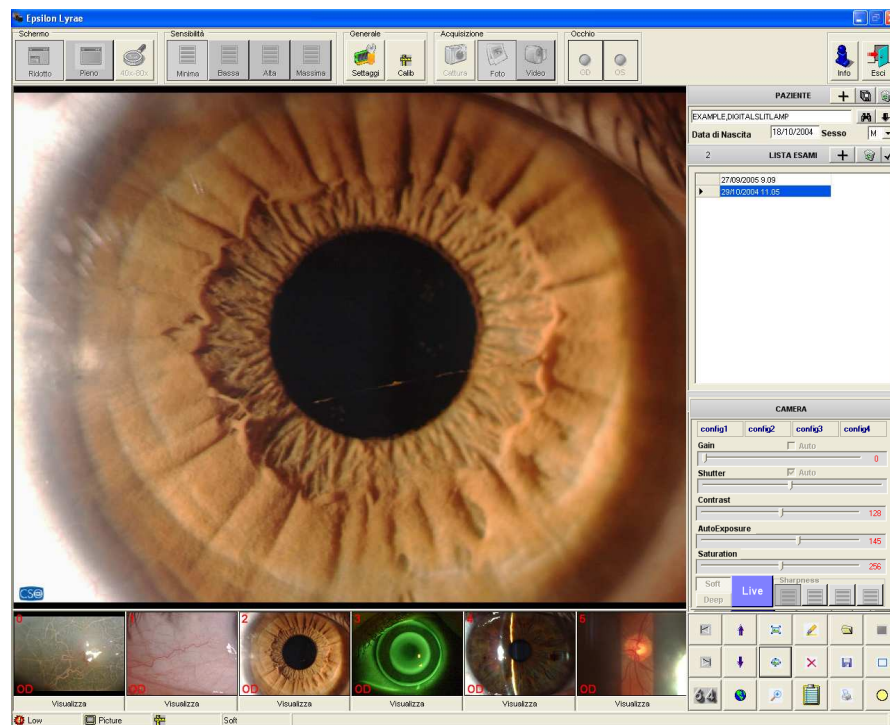
19. WORKING WITH EXISTING PATIENT DATA



In the main window, click the  icon near the “last name” line. The patient list will appear underneath.

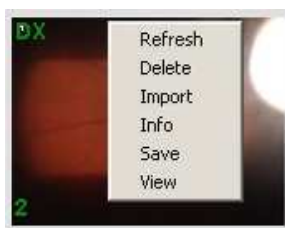
Attention: the patient’s sex can be used as a search filter. Eliminate M or F from the “sex” box to list all the patients. Enter “M” and click the binocular  to list all the male patients or enter “F” to list all the female patients.

Double-click the PATIENT name in the LIST. The following window will open:



The PATIENTS LIST box becomes the EXAM LIST, in which all the examinations are listed. Double-clicking an exam in the list displays the correlated images in the gallery in the lower portion of the window.

The gallery has a short menu. Position the cursor on an image and right-click to display the short menu:



The short menu offers several options:

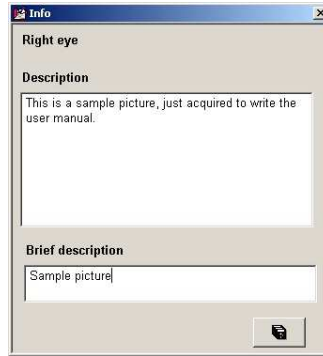
Refresh: refreshes the gallery contents.

Delete: deletes the current image.

Import: opens a new window for importing an external image.

Info: opens a new window for making notes and saving information concerning the current image.

Example:




The description may contain up to 255 characters, while the short description may be maximum 20 characters in length.

Save: export the current image or video clip.

View: opens the current image in the PROCESSING environment. You may also double-click an image to open.



If a video is opened, the movie viewer will launch automatically. If the viewer closes, you may restart the video by clicking the  icon.

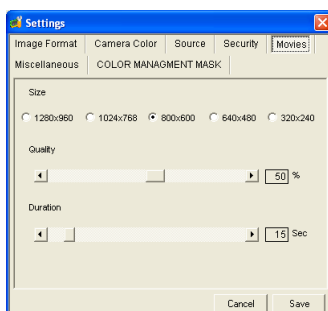
The right-hand menu offers several options:


Zoom on details -----
 Zoom in -----
 Zoom out -----
 View a video -----
 View the preceding gallery image -----
 View the next gallery image -----
 Export the current image -----
 Print the current image -----
 Activate the "measurement" mode -----
 Exit -----

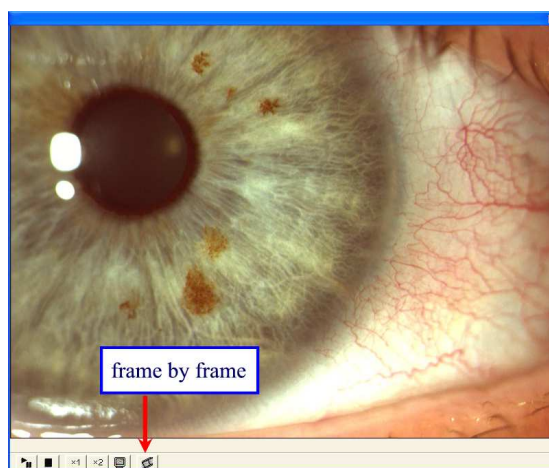


20. VIEWING A VIDEO

The videos are saved in .avi format. The video settings can be modified on the MOVIES panel in the SETTINGS menu.



If the gallery icon selected is a video, the viewer will launch automatically and the viewer icon  will be shown as enabled. To view the video, simply click this icon.





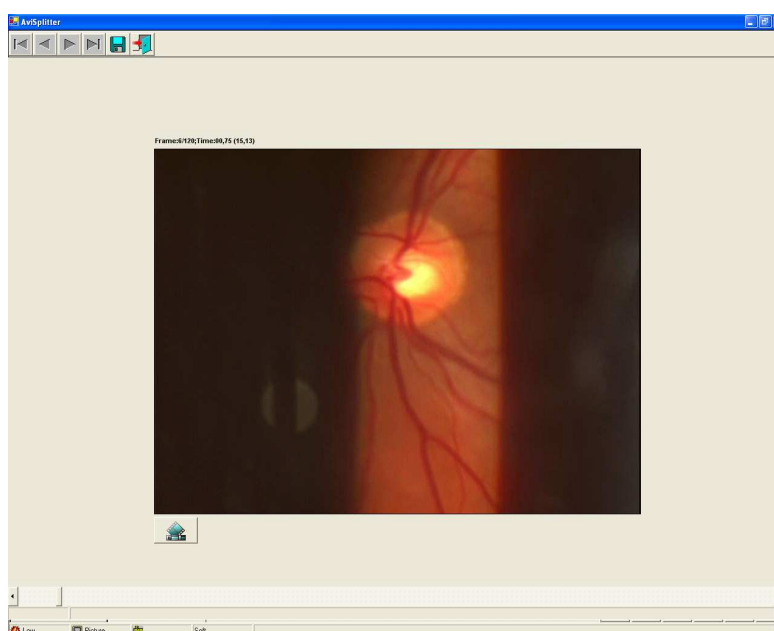
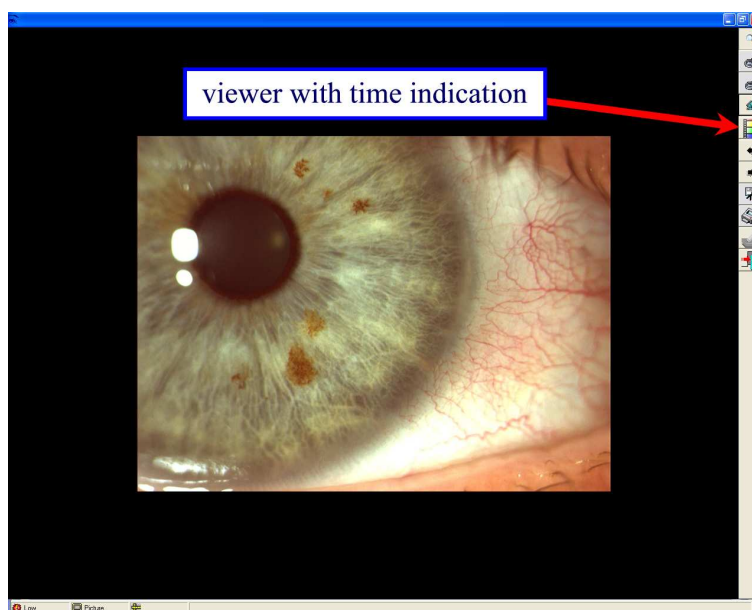
The video may be zoomed or viewed frame-by-frame by clicking the button and then pressing the space bar on the keyboard.

In the frame-by-frame mode, you may extract a frame from the video and save it in the image gallery: press SEND (ENTER) during viewing to save the current frame.

Whenever a new video is captured, the viewer will also be enabled and will display the elapsed time.



Click the icon to display, on the top right: the number of the current frame over the total number of frames, the TOTAL LENGTH (duration) of the video, and the ELAPSED TIME.



The elapsed time viewer function may not be available for videos captured using older software versions that do not support this function.

21. ZOOM

An enlarger (zoom lens) for viewing details is available.

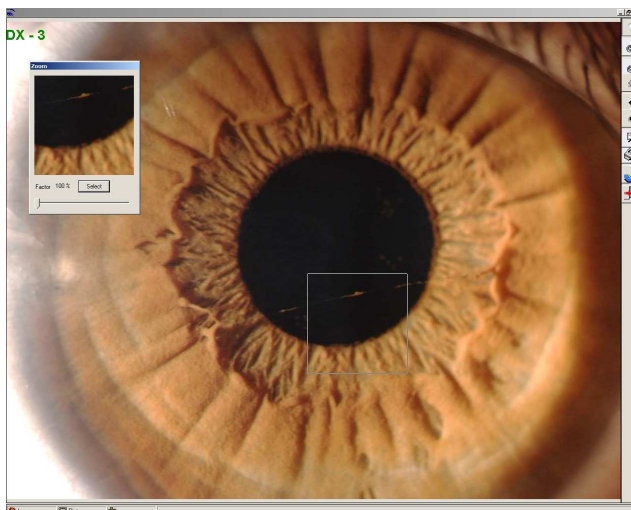
Click the Zoom icon  to activate the enlarger.

A new small window will open.





To adjust the zoom factor move the slider and then click SELECT.

A square moving lens will appear on the image. As it is moved over the image the details will appear in enlarged format in the zoom window.



The menu also includes zoom IN and zoom OUT functions.



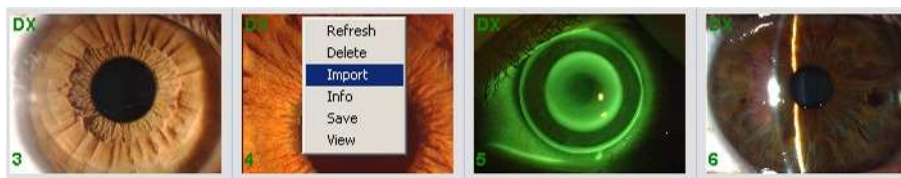
Click  to increase enlargement by 2.5 steps; click  to reduce by the same factor. The maximum enlargement is 4X.

When using the “zoom in” function, you may shift the image by moving the slider bars.

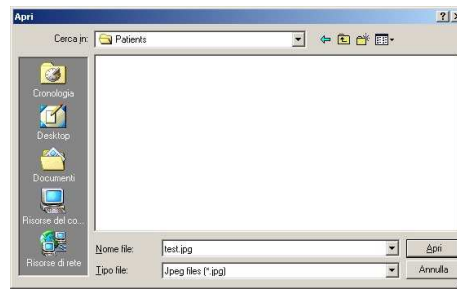


22. IMPORTING IMAGES INTO EXAMINATIONS

To insert an image in an examination, open the exam and right-click the image gallery. A menu will open. Select IMPORT.

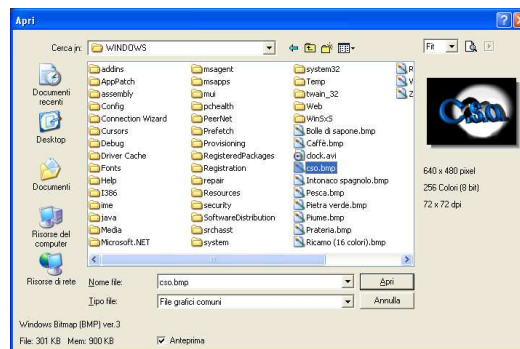


A new window will open. Select the image to be imported and click "OPEN."

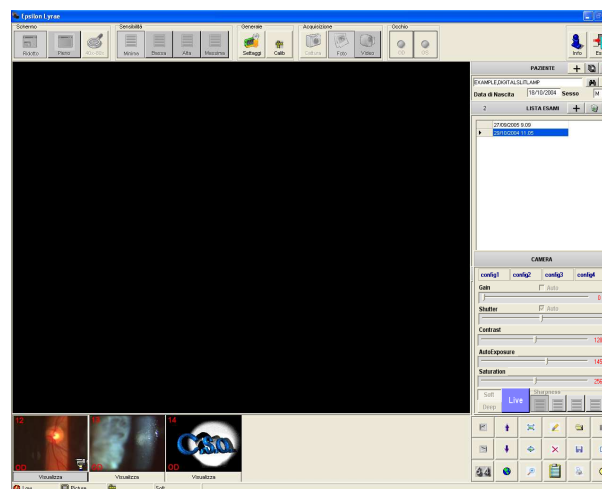


Another method for importing an image into an examination is to use the button on the bottom right of the main window. Select the file:

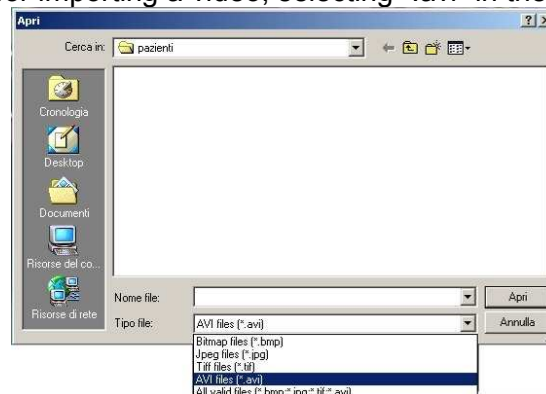
button on the bottom



After it is imported, it will be displayed in the gallery:



Use the same procedure for importing a video, selecting ".avi" in the "file type" box:



23. EXPORTING IMAGES

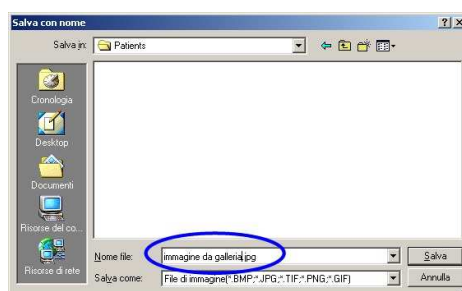
There are three ways to export images.

1) *exporting a single image from the gallery*

Open the patient, open the examination, and, in the gallery, right-click the image to be saved. Click “save” and select the folder into which to export the image.

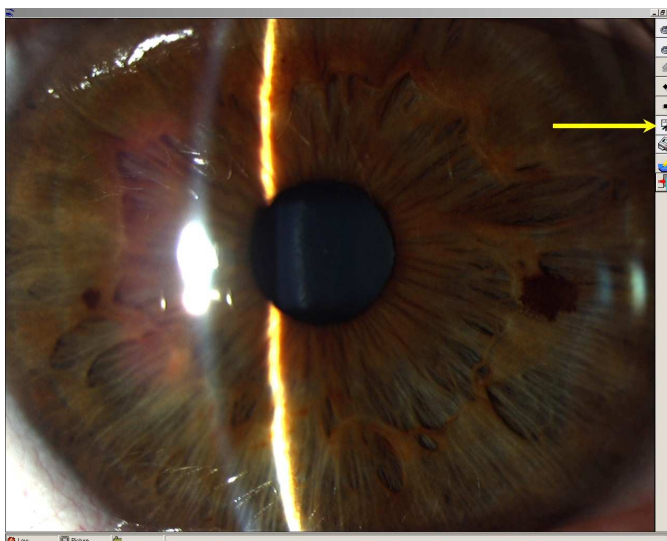


The image will be saved in the format indicated as the filename extension.



2) *exporting a single image from the browser window*

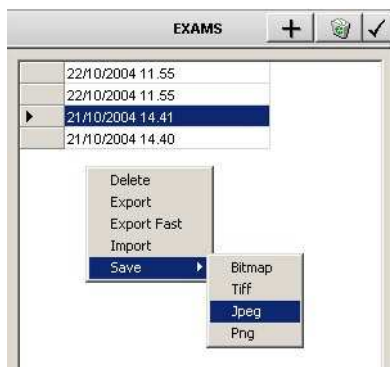
Open the patient, open the examination, and double-click the image to be exported from the gallery. In the browser window, click the EXPORT button:



Select the folder into which to export the image and click SAVE.

3) *exporting all the images contained in an examination*

Select an examination from the EXAM LIST and then select SAVE. Select the graphics format for export. ALL the images contained in the current examination will be saved in the selected folder.



24. CAPTURING IMAGES AND VIDEO SEQUENCES

An examination must be opened before images and videos may be captured. All the images captured will be associated with the selected examination.

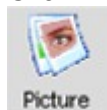
Click the LIVE key to enable the capture mode. The key lights green during capture.

A warning message may appear if the digital camera is not connected correctly with the FireWire cable supplied with the equipment.



Now select the IMAGE or the VIDEO mode. IMAGE is the default mode.

Click



to select the PHOTO mode or



to select the VIDEO mode.



You may start capture by pressing CAPTURE or using the button of the joystick on the slit lamp base.

Selected mode	Press/click . . .	To . . .	Notes
PHOTO	Joystick button	Capture an image	
	CAPTURE icon		
VIDEO	Joystick button	Start video filming	Filming stops when the button is pressed/clicked a second time
	CAPTURE button		

For best performance, during the LIVE capture phase the images are not displayed in the gallery in real time. You may refresh the gallery by right-clicking the gallery area and selecting REFRESH:

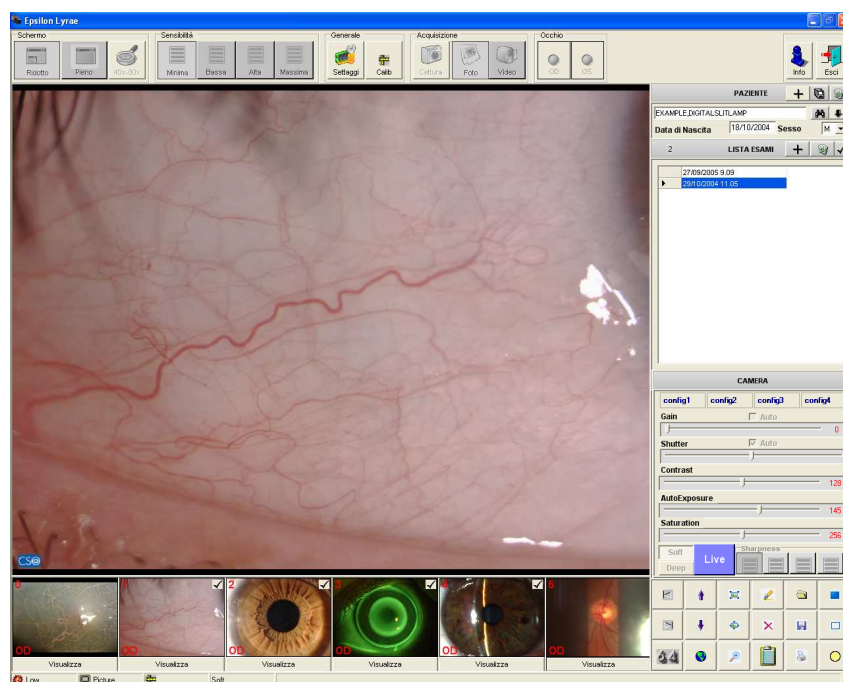
If the AUTO REFRESH option is selected on the SETTINGS menu, the gallery will be refreshed automatically.




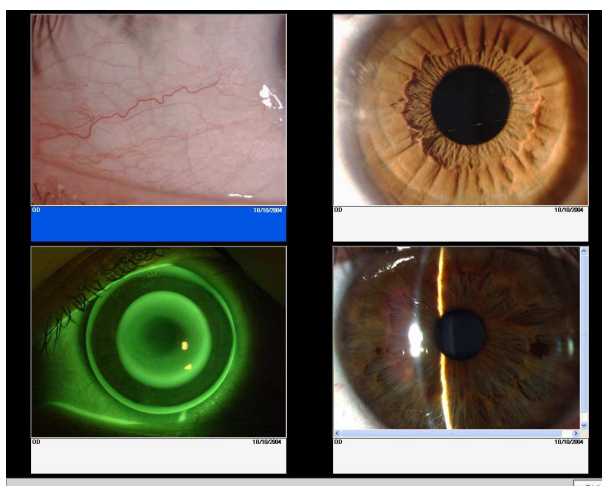
Attention: The images captured when no examination is selected will be lost.
To exit the capture mode, click the LIVE button again.

25. DISPLAYING IMAGES IN THE GALLERY

Up to four images may be viewed simultaneously, for comparison, in a gallery environment.
To insert images in the gallery exposition environment:



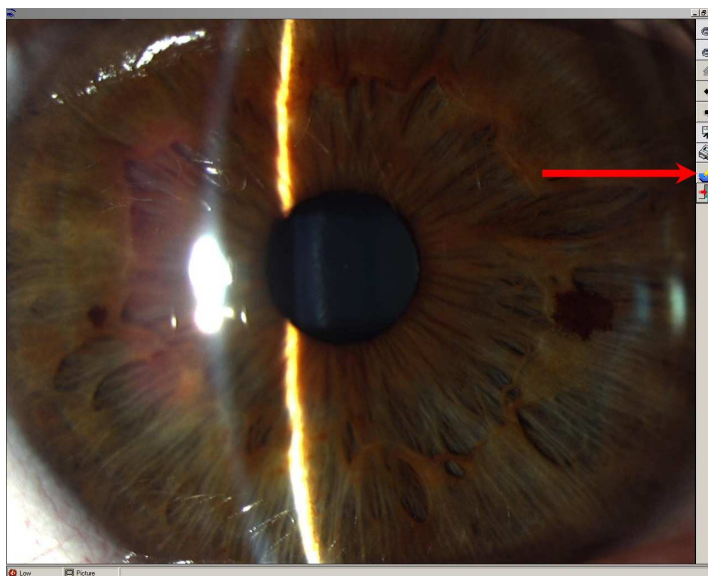
click on the images in the gallery at the bottom of the page. The ✓ sign will appear on the selected images. Now click the  button to view the gallery exposition.



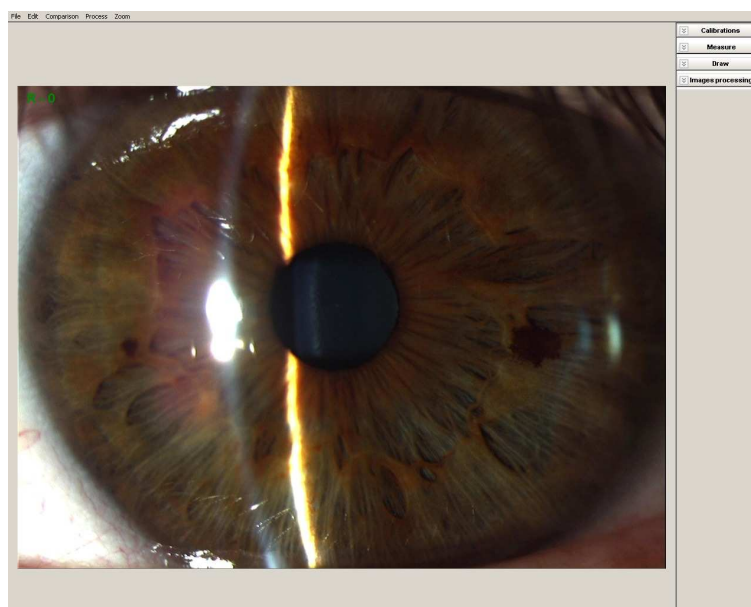
26. PROCESSING ENVIRONMENT

Warning: measurements provided by the software are purely indicative and subjected at the discretion of doctor opinion. CSO disclaim all responsibility for improper use of these data.

Select a patient, then select an examination and open a captured image.
The following window will open:



Click the indicated icon: the software will open the processing environment.

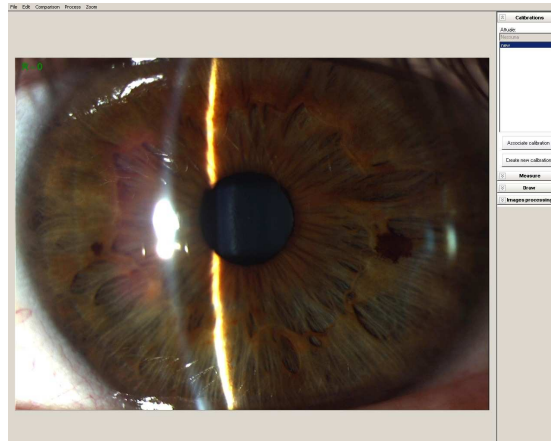


The right-hand menu allows you to access a series of utilities: calibration, measurement, drawing, and image processing.

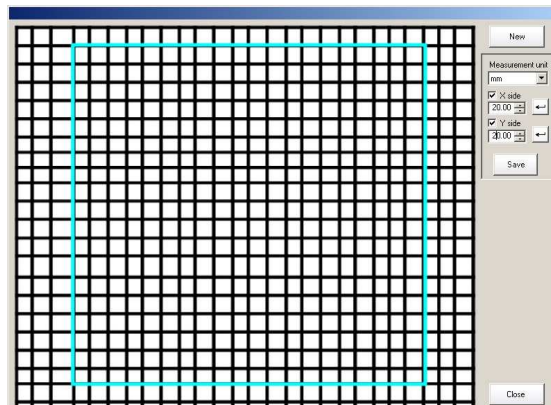
a. Calibration

Creating a new calibration

You may select an existing calibration or create a new one. From this window, you may associate a new calibration with the current image.



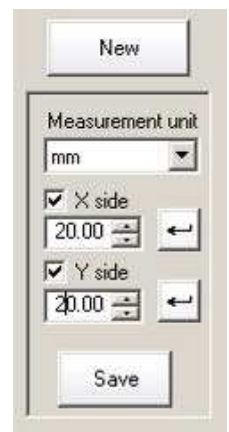
To create a new calibration, use a sheet of millimeter graph paper as your slit lamp target. Click **CREATE NEW CALIBRATION**: a new window will open. Select **NEW**. The following window will open:



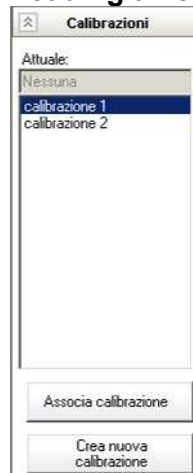
You will see the graph paper on the screen, with a resizable rectangle. Select a rectangle format that contains an exact number of whole measurement units on your paper (millimeters, for example) and in the menu on the right, select the correct **UNIT OF MEASUREMENT** (mm, in the example).

Type in the measurement of the **X SIDE** in the box for that datum and click ←; then type in the value for the **Y SIDE** and click ←. Now click **SAVE** and then **CLOSE**.

Type in a name for this calibration, which will now appear in your calibrations list.



Loading an existing calibration



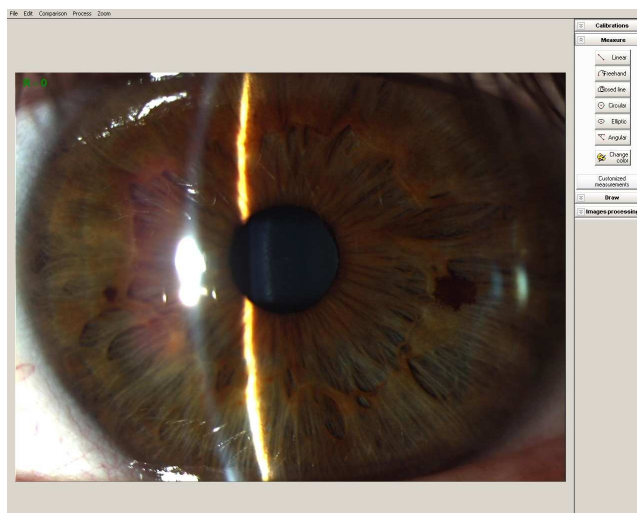
Open an examination image and activate the measurement mode.
Select the CALIBRATION option and then, from the calibrations list,
select the correct calibration for the current image.
Select ASSOCIATE CALIBRATION
to enable the MEASUREMENT button.



The button on the toolbar may be used to associate a calibration while in the LIVE mode

b. Measurement

After having associated a calibration, you may go on to the MEASUREMENT window:



The right-hand side of the window contains a set of measurement functions. Some examples:

LINEAR: gives the distance between two points.

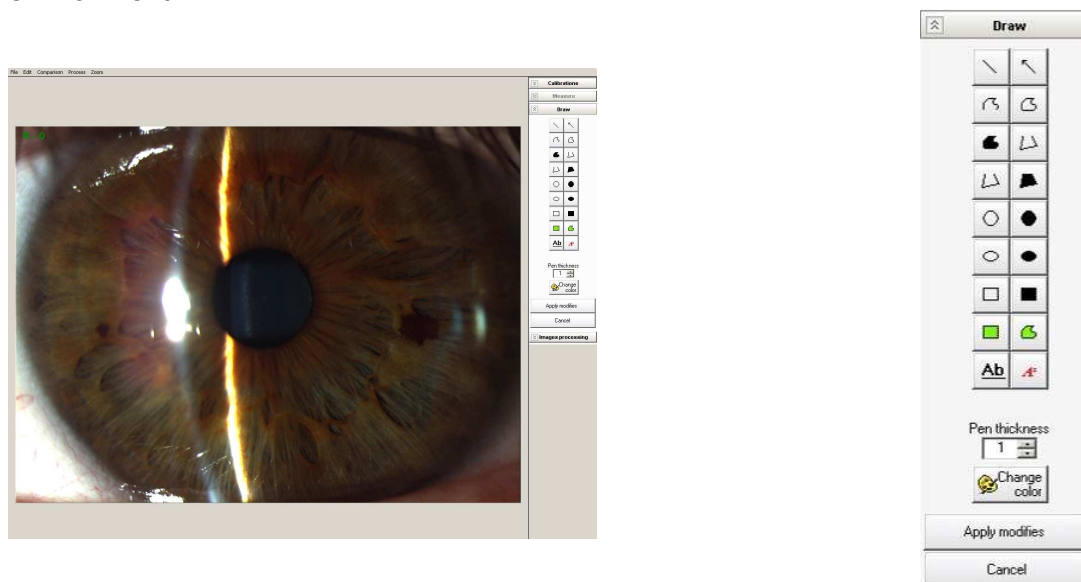
CIRCULAR: gives the radius and the area of a circle.

ANGULAR: gives the amplitude of an angle in degrees in the sexagesimal system.

Warning: the measurements given by the software are subject to the influence of a great number of variables, for which reason they must be considered to be purely indicative. The measurements should therefore be carefully evaluated by medical professionals. CSO declines any and all responsibility for damages attributable to use of said measurements.

c. Drawing

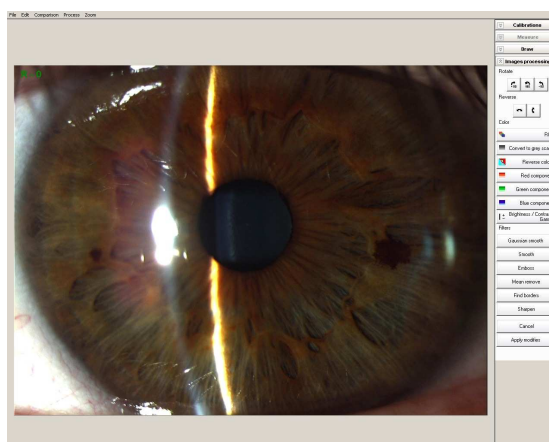
The DRAWING menu contains all the standard functions for drawing in the Windows environment.



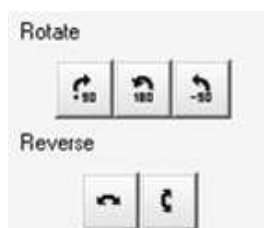
The user may draw: lines, arrows, freehand curves, freehand closed curves, empty circles, filled-in circles, empty ellipses, filled-in ellipses, empty rectangles, filled-in rectangles, and some other figures, and may also add text.

d. Image Processing

The IMAGE PROCESSING window contains a certain number of functions useful for manipulating the images, like filters, color control, and general utility functions.



You may rotate or invert the image.



A color control menu is available



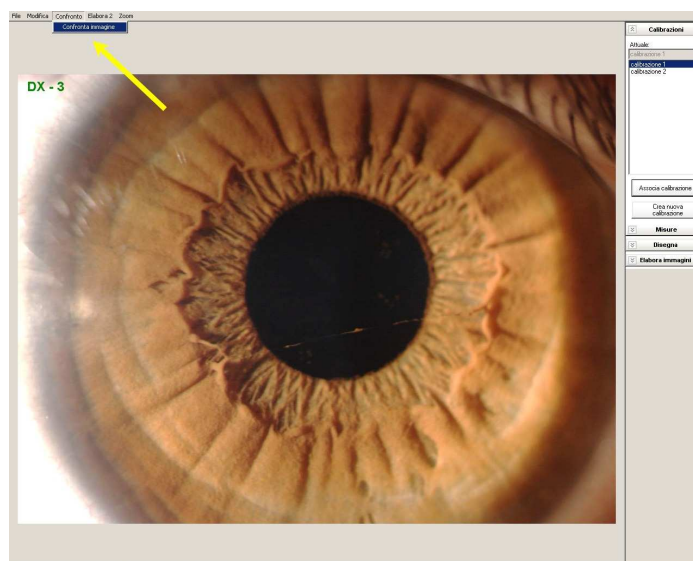
Several filters are available for processing the images.



The *Cancel* button zeroes the effects of the filters.

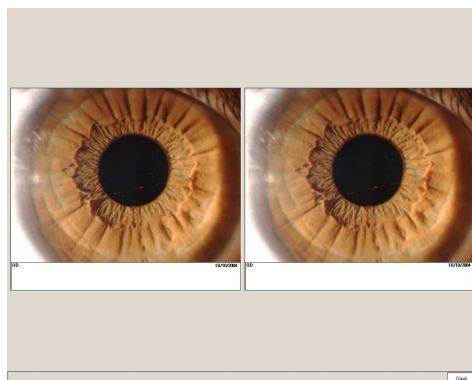
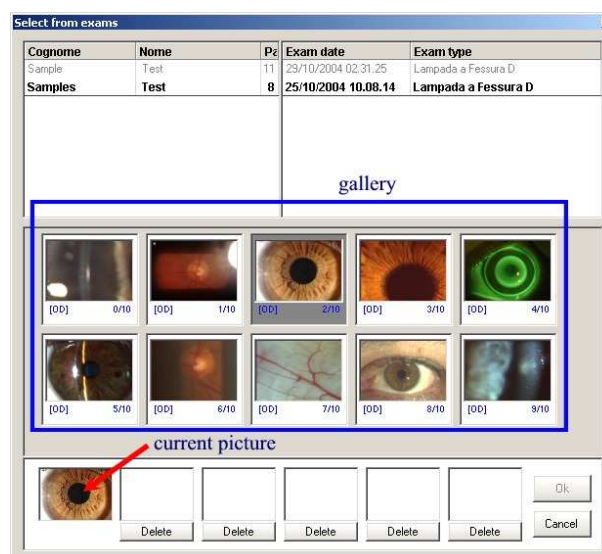
27. COMPARING IMAGES

Image comparison can be accessed from the browser window. Click the COMPARE button on the menu at the top left:



The window that will open will list the patients available in the database, with the relative examinations. A gallery will display all the images contained in the examinations, while the current image will be shown on the lower left.

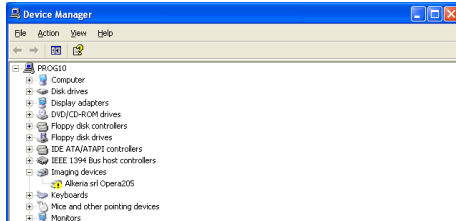
Select the examination from which to extract the image to be compared with the current image and double-click the icon that appears in the gallery. Click OK to view the comparison window.



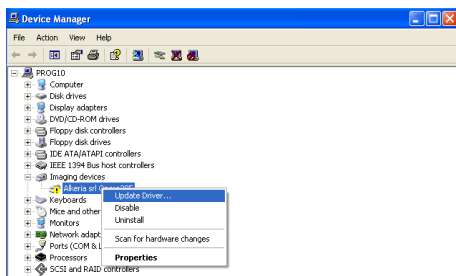
28. MANUAL INSTALLATION FOR MEGA DIGITAL CAMERA DRIVERS

Connect the digital beam splitter to the PC, by using the Firewire cable.

1. click with the right button on “My computer” → “Properties” → Device manager



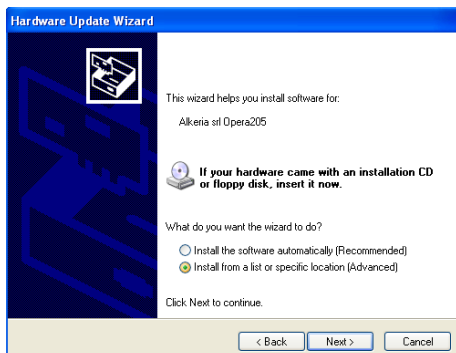
2. click on “Alkeria srl opera” with the right button , then select “Update driver...”



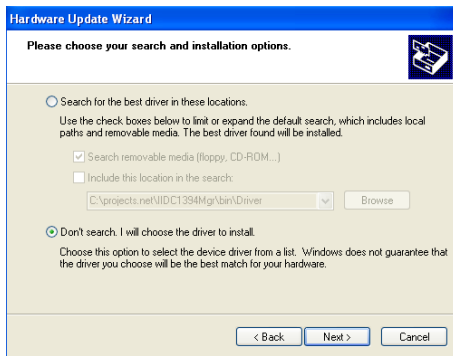
3. click “no, not this time”, then click NEXT



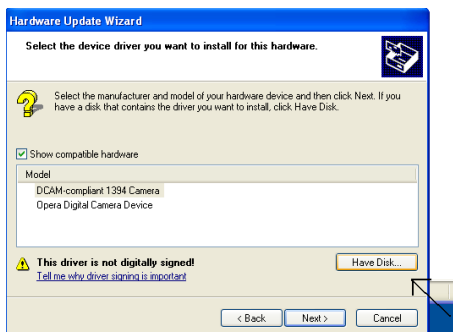
4. select “install from a list or specific location”, then NEXT



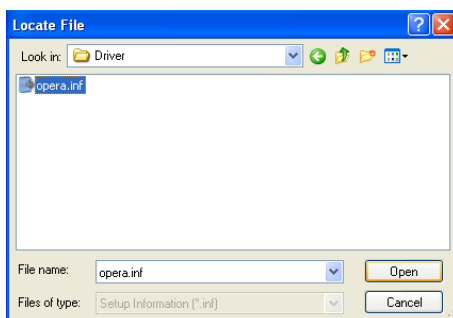
5. select “don’t search. I will choose the driver to install”. Then click NEXT



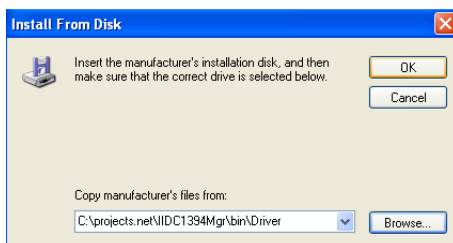
6. select HAVE DISK



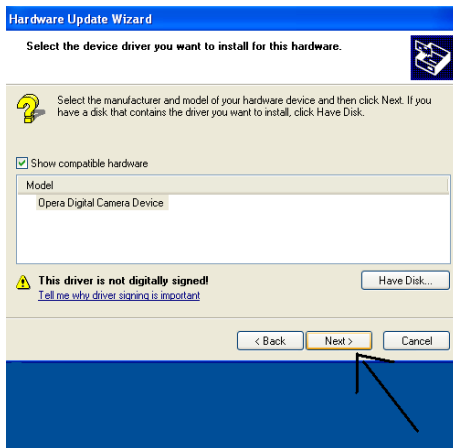
7. in the local drive, in the folder of the installed software, open the folder “mega vision driver” that contains the opera.inf file . select the file and then click OPEN



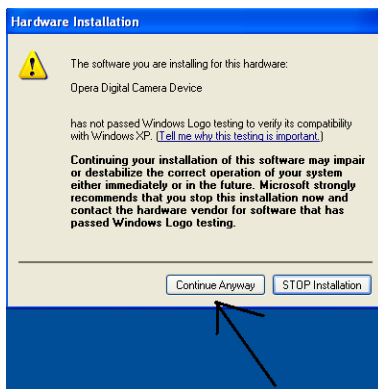
8. click OK



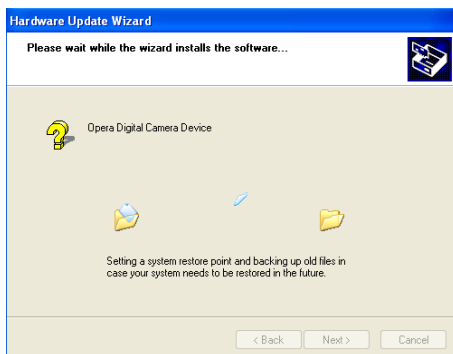
9. select “OPERA digital camera device” and then click NEXT



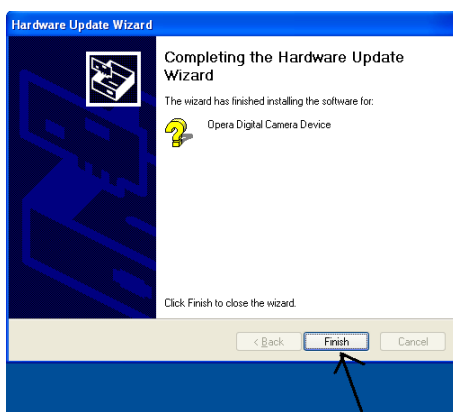
10. click on “continue anyway”



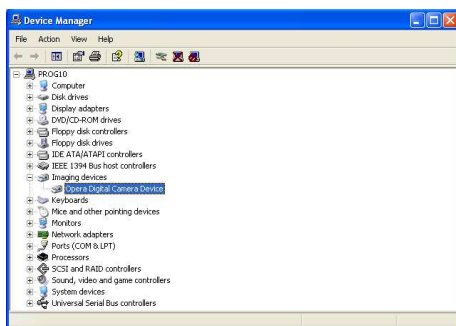
11. the driver will be installed



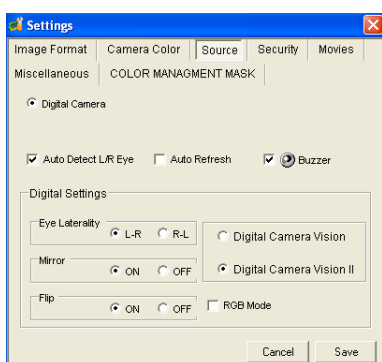
12. at the end of installation click FINISH



13. to check that everything was correct, click with the right button on “My computer” → “Properties” → Device manager. The “OPERA digital camera device” should appear correctly without any conflict.



14. RUN the software, select SETTINGS menu on the top bar. Select SOURCE and check the device “Digital Camera Vision II”.



Click CONTINUE to continue.

Epsilon Lyrae is ready to use as soon as installation completes!

Restart the PC.

To run the Epsilon Lyrae program, double-click the EPSILON LYRAE desktop icon.



Routine Maintenance

The operations illustrated below must all be performed with the power cord disconnected from the line socket. For any type of breakdown requiring work different from that described below, contact your installation service.

CLEANING

Periodically remove any dust that accumulates during use with a very soft cloth or a hand-operated pump. To remove other types of dirt, we suggest using soap and water. Do not use chemical solvents (alcohol, thinners, etc.) for cleaning.

END-OF-LIFE DISPOSAL

Dispose of the end-of-life instrument in accordance with the local laws in force regarding disposal and recycling of the various components making up the device.

When disposing of the packing materials, separate by type and dispose of in accordance with local disposal and recycling laws and regulations.

Technical Specifications

Video camera and video specifications

Sensor:	1/2 " Sony IT CCD, with progressive scanning
Image size:	up to 1392 x 1040 pixel
Sensor cell dimensions:	4.65 μm x 4.65 μm
Resolution:	8 bit
Digital interface:	IEEE 1394a; DCAM V1.30
Data transfer speed:	400 Mb/s
Capture speed:	11 fps
Image compression:	bmp, jpg, tiff, png, gif
Videos:	1280X960, 1024X768, 800 x 600, 640 x 480, 320 x 240 pixel; maximum duration 180 s
Algorithm:	Gamma Correction
Gain control:	Manual: 0-20 dB; Automatic
Exposure:	from 20 ms to 67 sec; Automatic
Advanced features:	Real-time shading, resident FIFO memory
LUT :	programmable
I/O ports:	6 ports
Operating temperature:	from +5°C to 45° C
Power supply:	DC 8V – 36V with IEEE 1394 cable
Power requirement:	less than 3 W (@ 12V DC, directly from FireWire cable)
Dimensions:	90 mm (L) x 87 mm (A) x 39 mm (P).

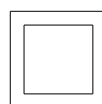
Minimum System Requirements

Processor:	Pentium IV, 2 GHz - RAM: 512 MB
Video card :	ATI Radeon 9200 (128 MB) or equivalent
Standard IEEE1394a FireWire card, OHCI 1.1 compatible, with auxiliary power supply	
Color monitor:	LCD or CRT, 1280 x 1024 resolution @75 Hz (CRT with 0.24 mm pitch)
Operating systems:	Microsoft Windows 2000 (con Service Pack 4), Windows XP. Internet Explorer 6 required.

Data Plate Symbols



Read the instructions
carefully.



Class II protection against
direct and indirect
electrical shocks.



Type B protection against direct
and indirect
electrical shocks.



Symbol attesting to CE
product compliance.

Classification According to EN60601 Standard - 1 August 1990

Class of protection against electrical shock:	Class II
Level of protection against direct and indirect contacts:	Type B
Compliance level for protection against infiltration of liquids:	IP20
Method of sterilization:	Disinfectable device
Compliance level for protection in the presence of inflammable substances, anesthetics, or detergents:	No protection
Use conditions:	Occasional use – Intermittent use
(LIKE SLIT LAMP)	Operation cycle: 10 min. ON 15 min. OFF
Patient-coupled electrical equipment definition:	Devices with a part not specifically designed for application of electrically-conducting parts to the patient.

REFERENCE STANDARDS:

DIRECTIVE 93/42/EEC “MEDICAL DEVICES” of 14 June 1993

- The following harmonized standards were also applied:
- **EN 60601-1 - “Medical Electrical Equipment – Part 1: General Requirements for Safety” as amended, corresponding to Italian standard CEI 62-5 - 1991 edition – no. 1445.**
- **EN 60601-1-2 - “Medical Electrical Equipment – Collateral Standard: Electromagnetic Compatibility,” corresponding to Italian standard CEI 62-50 – 2001 edition.**
- **EN 60601-1-1 - “Medical Electrical Equipment – Collateral Standard: Safety Requirements for Medical Electrical Systems” as amended, corresponding to Italian standard CEI 62-51 - 1994 edition – no. 2308.**
- **ISO 10939: 1998 “Ophthalmic Instruments – Slit Lamp Microscopes.”**
- **ISO 15004 “Ophthalmic Instruments - Fundamental requirements and test methods”**



CSO srl
Costruzione Strumenti Oftalmici
 Via degli Stagnacci, 12/E
 50010 Badia a Settimo - Scandicci (FI)
 tel. + 39 (055) 722191 - FAX + 39 (055) 721557
 e-mail: support@csophthalmic.com



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