

User Manual

MagniLink MacViewer

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1 About LVI

LVI Low Vision International AB was founded in 1978 and is one of the world's leading manufacturers of equipment for persons with visual impairments. Development of new products takes place in close cooperation with users and professional staff within the low vision rehabilitation industry. LVI is quality-certified in accordance with ISO 9001 and environmentally-certified in accordance with ISO 14001.

The information in this manual has been carefully checked and is believed to be accurate. However, LVI assumes no responsibility for any inaccuracies that may be contained in this manual. In no event will LVI be liable for direct, indirect, special, exemplary, incidental, or consequential damages resulting from any defect or omission in this manual. In the interest of continued product development, LVI reserves the right to make improvements in this manual and the products it describes at any time, without notice or obligation.

2 Introducing MagniLink MacViewer

MagniLink MacViewer is a programme used on a Mac computer to display images from a MagniLink camera system. The programme can control the camera properties, such as magnification level, artificial colours and brightness. If the camera supports OCR it is possible to OCR process a text and have it read aloud by a speech synthesiser.

2.1 Minimum System Requirements

- Mac OS X Version 10.14 Mojave, or later
- 2 integrated USB 2.0 ports
- To use the system in minimum resolution and picture frequency you will need a computer with 2.53 Hz Intel Core 2 Duo processor, 4 GB RAM.

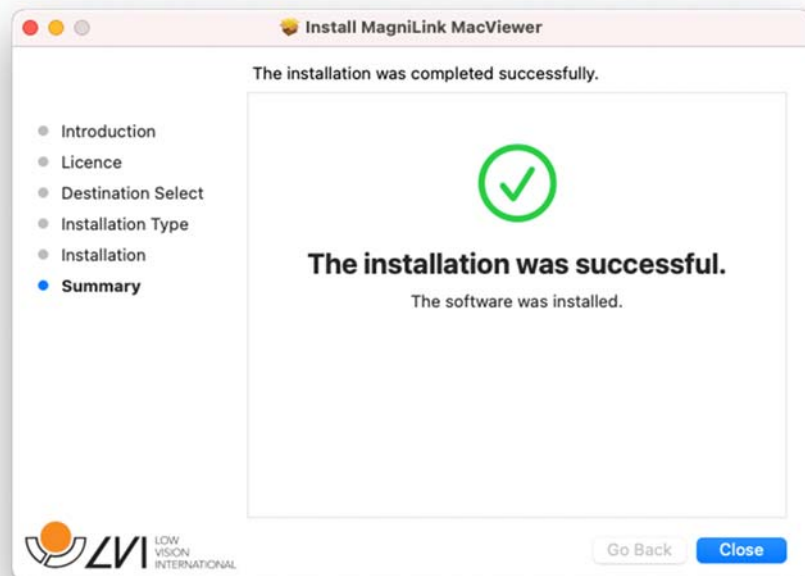
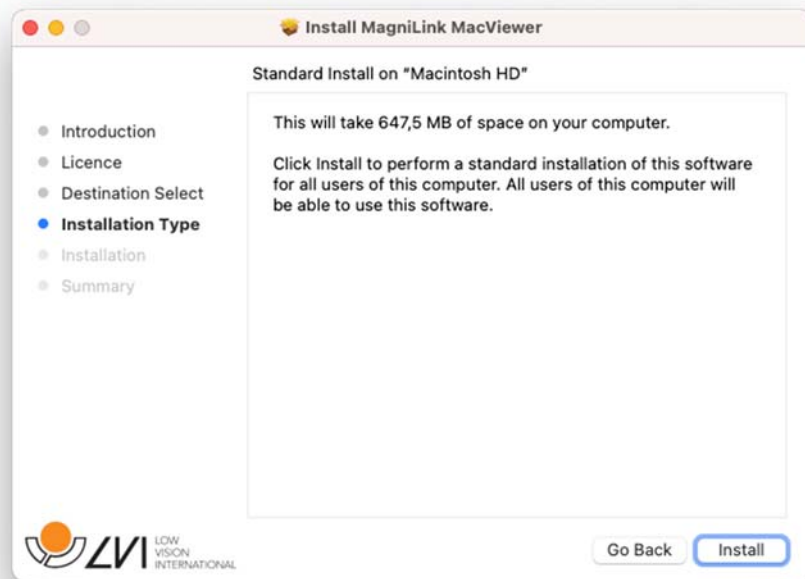
2.2 Recommended System requirements

- Mac OS X Version 10.14 Mojave, or later
- 1 integrated USB 3.0 port
- To use the system in maximum resolution and picture frequency you will need a computer with an i5 or i7 processor, 4 GB RAM memory, external graphics card with at least 512 MB inbuilt memory.

3 Installation of Software

To install MagniLink MacViewer on your Mac, insert the USB stick containing the software into one of the computer's USB ports. Begin the installation by double clicking on the "MagniLink MacViewer.pkg" file located in the "Software Mac" folder.





4 Using the Software

4.1 Functions via menus

The application consists of a window with tabs and groups of buttons. There is a tab for application settings and another tab for handling the camera. Depending on whether the system is licensed for OCR, there is also a tab for handling the OCR processed text.

4.1.1 Camera tab



Change natural colours

used to change between natural colours and grey scale.

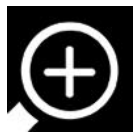


Change artificial colours

used to change between artificial colours



Decrease magnification

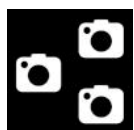


Increase magnification



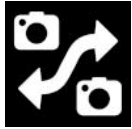
Overview mode

Reduces magnification to overview mode. Click again to restore the magnification. When overview mode is active, a sight is displayed in the middle of the video window.

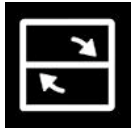


Change Image Source

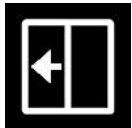
Used to swap image sources (if there are more than two sources).



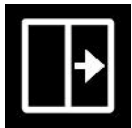
Change camera
Used to swap cameras.



Change split mode
Change between vertical and horizontal split mode.



Move split left
Moves split mode to the left.



Move split right
Moves split mode to the right.



Pan left



Pan right



Tilt down



Tilt up



Position 1
To save the position, hold down "Ctrl" while pressing the button. The camera image will then move into the saved position when pressing the button.

**Position 2**

To save the position, hold down “Ctrl” while pressing the button. The camera image will then move into the saved position when pressing the button.

**Position 3**

To save the position, hold down “Ctrl” while pressing the button. The camera image will then move into the saved position when pressing the button.

**Lock autofocus**

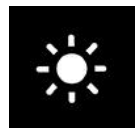
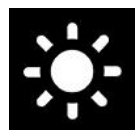
Locks the autofocus mode. This can be used when you wish to write by hand. In this way, autofocus is not affected by the pen or your hand. Press the button a second time to reactivate autofocus.

**Focus up**

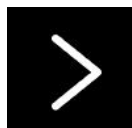
Reduce focus distance. When this function is used, autofocus is turned off.

**Focus down**

Increase focus distance. When this function is used, autofocus is turned off

**Reduce brightness/contrast****Increase brightness/contrast****Reference line/bar left/up**

Adjust the position of the reference line. Press the button to move the reference line to the left. Hold the button in to change the reference line to horizontal and move it upwards. The reference line then becomes a vertical bar which diminishes the viewing area. To make the bar horizontal, press the button again.



Reference line/bar right/down

Same as the previous command but in the opposite direction.



Reduce lamp brightness



Increase lamp brightness



Take snapshot

A dialogue box "Save pictures" opens. A file name (with the day's date and time) and a folder (MagniLink) are automatically suggested. Just press "Enter" to save the picture. If you wish to save the picture somewhere else, or with another name or in another format, (the standard is JPG), you can change this manually. To save a picture quickly, hold down "Shift" when you press the button.



Show pictures

Press to view the saved pictures. Mark the picture you wish to view and press Enter or select Open. The picture is normally opened in Mac OS standard picture-viewing programme where, among other things, the picture can be enlarged. To view the most recently saved picture quickly, hold down "Shift" when you press the button.



Start/stop video recording

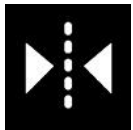
Press to open the "Save video clip" dialogue box. A file name (with the day's date and time) and a folder (MagniLink) are automatically suggested. Press Enter to save with the suggested name. If you wish to save the video in a different folder, or with another name, you can change this in the dialogue box. Stop the recording by pressing the button again. To start video recording quickly, hold down "Shift" when you press the button.

**Show video recording**

Press to view the saved video files. Mark the video you wish to view and press Enter or select Open. The video is normally opened in Mac OS standard media player software. To view the most recently saved video recording quickly, hold down "Shift" when you press the button.

**Rotate the camera image**

Rotates the camera image clockwise. To rotate anti clockwise, hold down Shift when you press the button.

**Mirror the camera image**

Press again to reverse the mirror image.

**Freeze the camera image**

Press again to release the freeze.



OCR process (Only shown if the system has a licence for OCR)

When OCR processing is complete, the programme changes to the OCR tab and the text is read. If there is already text under the OCR tab this is replaced. Hold down Shift when you press the button to insert the text on a new page.



Whole image (Only shown if the system has a licence for OCR)

When this is active, the whole camera image is shown. Otherwise edit in the image, depending on how large the camera window is.

**Next split screen mode**

Switches to the next split screen mode. In order to switch to the previous mode, hold down Shift when clicking on the button.



Always on top

Activates/deactivates "always on top" If "Always on top" is activated, the camera image will be placed over other open applications. This means that another programme can be in focus and that you can for example use a word processor while looking at the camera image.



Help

Opens the user guide in the standard application for showing PDF files.

4.1.2 OCR tab

The following tab is only shown if the system has an OCR licence.



Save documents

A dialogue box opens. A file name (today's date and time) is suggested automatically. It is possible to save the text as an RTF file (.rtf) or zip file.



Open documents

A dialogue box opens. From the dialogue box, select the file to be opened. It is possible to open PDF files, RTF files and image files, .bmp, .jpg, .png, .gif and .tiff, as well as saved zip files.



Change natural colours

used to change between natural colours and grey scale.



Change artificial colours

used to change between artificial colours

Arial

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**Font**

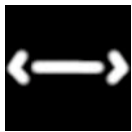
Changes the font of the OCR processed text. It is also possible to choose bold and italic text. The font that is used has no effect on the result of the OCR processing.

Font size**Stop reading**

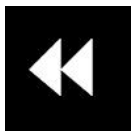
The next reading will begin from the start of the text.

**Change display mode**

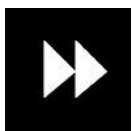
Changes the display mode for OCR processed text. The display modes available are "page view", "row view", "word view", "image view", "image and word" and "image and row".

**Silent display mode**

Switches to silent display mode. There are two silent modes; one where the text is moved horizontally on one line and one where the text is moved vertically in a column.

**Read previous**

With this button, the user can go backwards through the text. If the reading mode is set as character, one character is read for each keystroke. If the reading mode is word, you move backwards through the text word by word. If the reading mode is sentence, you move backwards one sentence. If the reading mode is block, you move backwards one block.

**Read next**

With this command, the user can move forward in the text. If the reading mode is set as character, one character is read for each keystroke. If the reading mode is word, you move forward through the text word by word. If the reading mode is sentence, you move forwards one sentence. If the reading mode is block, you move forwards one block.



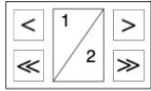
Switch reading mode

This command selects the reading mode that is to be employed when the "Read previous" or "Read next" command is entered. The modes available are: character, word, sentence, block and view. The modes that can be selected change depending on the display mode.



Volume and speed

The upper slider sets the volume and lower regulates the speed of the speech.



Pages

Moves through the OCR processed pages. The upper buttons move one page and the lower ones moves five pages.



Next split screen mode

Switches to the next split screen mode. In order to switch to the previous mode, hold down Shift when clicking on the button.



Always on top

Activates/deactivates "always on top"



Help

Opens the user guide in the standard application for showing PDF files.

4.2 Functions via the keyboard

MagniLink Student is presented in a Mac application and all features in the system can be controlled from the keyboard.

If you want to use the standard F1, F2, etc. keys without pressing the (fn) key. You can change the keyboard settings. This setting can be accessed from the Apple menu -> System Preferences -> Keyboard.

Default hotkey settings from the computer keyboard.

fn + F1	Natural colours
fn + F2	Positive picture with increased contrast Artificial colours; White/Black, Yellow/Black, Green/Black, Red/Black, Yellow/Blue, White/Blue Press F2 to toggle through the different colours. (Shift + fn + F2 toggles backwards.)
fn + F3	Negative picture with increased contrast Artificial colours; Black/White, Black/Yellow, Black/Green, Black/Red, Blue/Yellow, Blue/White Press F3 to toggle through the different colours. (Shift + fn + F3 toggles backwards.)
fn + F5	Take snapshot Press fn + F5 to open the Picture saving dialog box. A file name (today's date and time) and folder (MagniLink) is automatically suggested. Just press Enter to save the picture. If you want to save the picture somewhere else or with another name or format (JPG is standard) you can manually change this.
fn + Shift + F5	Take snapshot – fast To save a snapshot picture fast without specifying file name and folder, press fn + Shift + F5. This command will save the snapshot to the MagniLink folder or to the last folder that was selected with F5.
fn + Option + F5	Start/Stop video recording Press fn + Option + F5 to open the Video recording dialog box. A file name (today's date and time) and folder (MagniLink) is automatically suggested. Just press Enter to save the video. If you want to save the video somewhere else or with another name or format you can manually change this. Stop the video recording by pressing fn + Option + F5 once again.

fn + Option + Shift + F5	Start video recording – fast Press fn + Option + Shift + F5 to start video recording at once, without specifying file name and folder. This command will quick save the video to the MagniLink folder or to the last folder that was used.
fn + F6	View stored snapshots Press fn + F6 to view stored pictures. Mark the picture and press Enter or choose open. The picture is normally opened in the standard Mac picture-viewing program, where you can, for example, magnify the picture.
fn + Shift + F6	View last stored snapshot – fast Press fn + Shift + F6 to open the last saved snapshot. If no snapshots have been saved during this program cycle, the functionality will be the same as for fn + F6.
fn + Option + F6	View stored videos Press fn + Option + F6 to view recorded video sequences. Mark the video to view and press Enter or choose Open. The video is opened in the standard video viewer.
fn + Option + Shift + F6	View last stored video – fast Press fn + Option + Shift + F6 to open the last saved video recording. If no video recording have been saved during this program cycle, the functionality will be the same as for fn + Option + F6.
fn + F8	Preset split modes Press fn + F8 to toggle among the preset split modes. If multiple monitors are used, the split modes will toggle over all monitors, starting with the primary monitor. The window can also be controlled using the mouse or the standard Mac OS X commands. (fn + Shift + F8 toggles backwards)
fn + Option + F11	Return to default settings Press fn + Option + F11 to return to the default settings (normal window, natural colours and normal brightness).
Arrow up	Zoom in
Arrow down	Zoom out

Option + O	Overview Switches to an overview mode. The camera zooms out and a sight is shown in the middle of the video window. To exit overview mode, press the key combination again.
Arrow left	Decrease brightness
Arrow right	Increase brightness
Option + Arrow left	Guiding line left/up
Option + Arrow right	Guiding line right/down
Option + 6	Reduce lamp brightness
Option + 7	Increase lamp brightness
Option + A	Toggle "always on top" This key combination will toggle "always on top" for the application window. If this option is activated, the camera application window will be placed above all other application windows that are not set as "always on top". This will make the camera application window viewable even if the application window does not have focus and would otherwise have been covered by another application window. This, for example, facilitates writing in a word processor, while viewing the camera image
Cmd + M	Minimizes the application
Option + R	Rotates the camera picture clockwise Each time you press this key combination the picture rotates 90° (90°, 180°, 270°, 0°).
Shift + Option + R	Rotates the camera picture counter clockwise Each time you press this key combination the picture rotates 90° counter clockwise (270°, 180°, 90°, 0°).
Option + I	Mirror camera image By pressing Option + I, you can mirror the camera image. This is a useful feature if you for example would like to use the camera as a magnifying makeup mirror.
Option + F	Freeze camera image By pressing this key combination, the camera image is frozen until the key combination is pressed again.

Option + J	Autofocus on/off Press this key combination to lock the autofocus in the present position. This could be used, for example, when writing by hand without risk of disturbing the focusing system with the hand or the pen. A subsequent press reactivates the autofocus system.
Option + Up arrow	Decrease focusing distance
Option + Down arrow	Increase focusing distance
Option + H	Hide menus
Option + Minus	Reduce menu size
Option + Plus	Increase menu size
Cmd + ,	Open the preferences dialog This key combination is the standard way to open the preferences dialog in a Mac application.
Cmd + ?	Open the manual This key combination opens the manual pages in the standard application for viewing pdf-files.

The following functions are only available for cameras that support OCR.

fn + F4	OCR-process This command takes a picture for OCR-processing. The program then switches to text view and the OCR-processed text is read aloud. If the text view already contains text, this is replaced by the text from the OCR conversion.
fn + Option + F4	Process with OCR and add text Works like the previous command, but the text from the OCR conversion is added to the existing text.
fn + Shift + F4	Take picture (without OCR) This command takes a picture without OCR processing it. It is then possible with the mouse to select the parts of the image that you want to OCR process.
fn + Option + Shift + F4	Add picture (without OCR) Works like the previous command but the image is added to a new page.
Option + 3	Previous page If several pages have been scanned, you move to the previous page.

Option + 4	Next page If several pages have been scanned, you move to the next page.
Backspace	Remove current page If several pages have been scanned, you remove the page in question.
Option + L	Whole image Changes between whole image and cropped image.
Option + S	Toggle column selector Activates or deactivates the column selector. When the column selector is active, only those columns that are intersected by the column selector are OCR-processed.
fn + Ctrl + Option + F5	Save documents
fn + Ctrl + Option + F6	Open documents
Cmd + C	Copy text Copy all text in the text view to the Clipboard. It is then possible to paste the content of the clipboard into another program, such as a word processor.
Cmd + V	Paste text If the user has copied text from another program, this text can be pasted into the text view. This command replaces the existing text.
Cmd + Option + V	Paste and add text Works like the previous command, but the text is added to the existing text.
V	Switch between camera view and text view If a text has been OCR-processed, this command switches between camera view and text view.
B	Display mode Switches to display mode for OCR-processed text. The available display modes are: "page view", "row view", "word view", "image view", "image and word" and "image and row".
N	Silent mode Switches to silent display mode. There are two silent modes. One where the text moves horizontally on a line and one where the text moves vertically in a column.

-
- | | |
|-------|---|
| 1 | Start/Pause reading
If no reading is currently in progress, reading starts, otherwise reading is paused. |
| 2 | Stop reading
This command stops the reading. The next reading will begin from the start of the text. |
| 3 | Read previous
With this command, the user can go backwards through the text. If the reading mode is sentence, you move backwards through the text one sentence at a time. If the reading mode is word, you move backwards through the text word by word. If the reading mode is set to character, one character is read for each keystroke. |
| 4 | Read next
With this command, the user can move forward in the text. If the reading mode is sentence, you move forward through the text one sentence at a time. If the reading mode is word, you move forward through the text word by word. If the reading mode is set as character, one character is read for each keystroke. |
| 5 | Switch reading mode
This command selects the reading mode that is to be employed when the "Read previous" or "Read next" command is entered. The modes are, character, word, sentence, view and block. Which modes can be selected depends on the display mode. |
| 6 | Slower
Reduces the reading speed. |
| 7 | Faster
Increases the reading speed. |
| 8 | Reduce volume
Reduces the volume of the voice. |
| 9 | Increase volume
Increases the volume of the voice. |
| 0 | Next voice
Switches to the next installed voice. This command also changes the OCR engine's language to the new voice's language. |
| Minus | Decrease font size |
-

Plus	Increase font size
A	Pan left (If the document is magnified)
D	Pan right (If the document is magnified)
W	Pan up (If the document is magnified)
S	Pan down (If the document is magnified)

4.3 Gestures

If the computer is equipped with a multi-touch pad, some functionality can be controlled from the touchpad.

Zoom

Place two fingers on the touchpad; pinch to zoom out and expand to zoom in.

Rotate camera image

Place two fingers on the touchpad and do a rotating motion to rotate the camera image.

4.4 Functions via the mouse

Certain functionality can be controlled with the mouse.

In camera mode.

- Rolling the scroll wheel can zoom in on the image.

in text mode.

- By pressing the left mouse button and marking the text that you want OCR processed.
- By scrolling with the scroll wheel you can zoom in the image and change the font size.
- By holding down the scroll wheel and then moving the mouse cursor you can pan in the picture (If it is enlarged).

It is possible to open a document by dragging it into the application.

4.5 Information and settings window

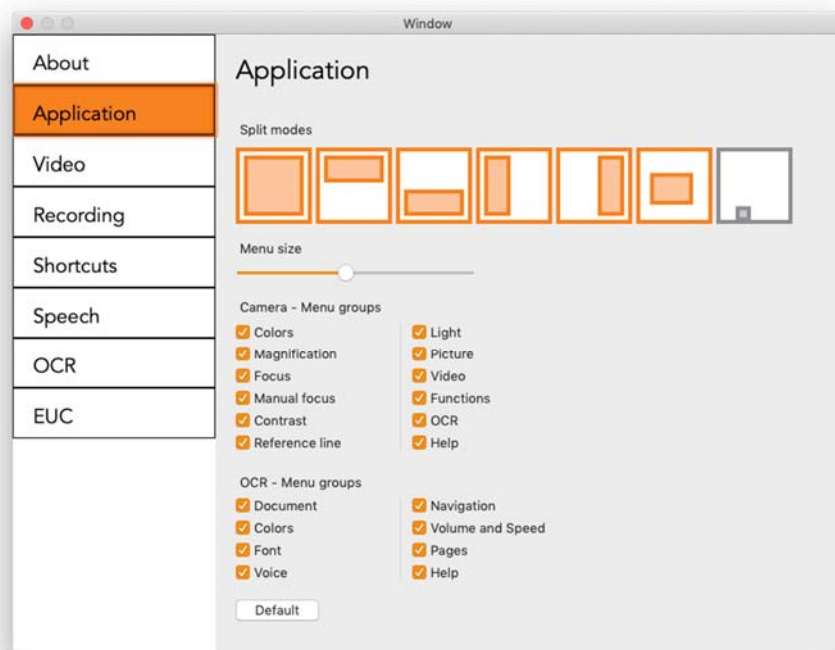
The Information and settings window consists of a number of different tabs that contain application information and alternative settings.

4.5.1 About the application



Information regarding the software version and license can be found under this tab. It is also possible to activate a license here.

4.5.2 Application Settings



Split screen mode

It is possible to choose the mode you want when changing split screen mode.

Menu size

The size of the menus and buttons can be changed here.

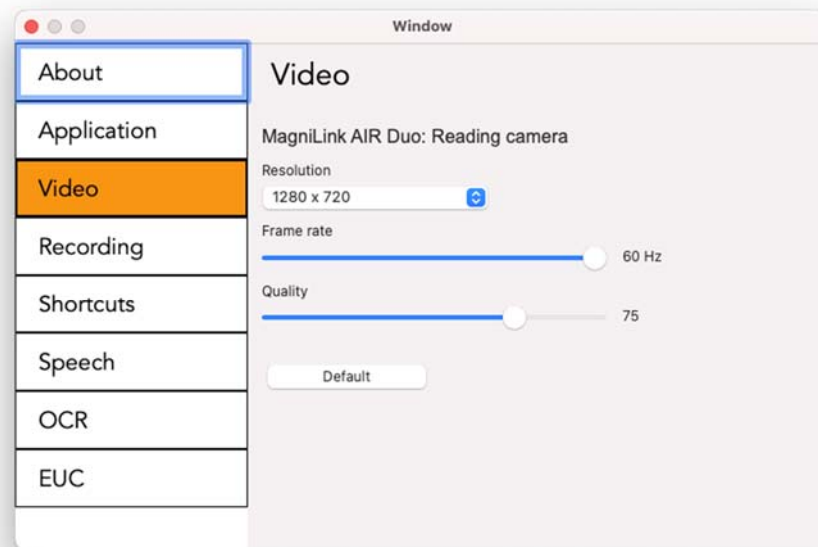
Camera - Menu groups

It is possible to choose which groups of buttons appear in the camera tab.

OCR - Menu groups

It is possible to choose which groups of buttons appear in the OCR tab.

4.5.3 Video Settings



Resolution

Select from the camera's various resolution options. At resolution 1280x720, the frame rate can be set up to 60 Hz. At resolution 1920x1080, only 30 Hz is possible.

Frame rate

This setting allows the user to limit the frame rate. For the best video quality, the frame rate should be 60 Hz, but it may be appropriate to set the frame rate at 30 Hz for computers with a lower level of performance.

4.5.4 Recording Settings



Limit recording length

Activate this function if you wish to limit the length of recording.

Length in minutes

If you chose to limit the recording length, you can set the limit in minutes here, from 1 to 60 minutes.

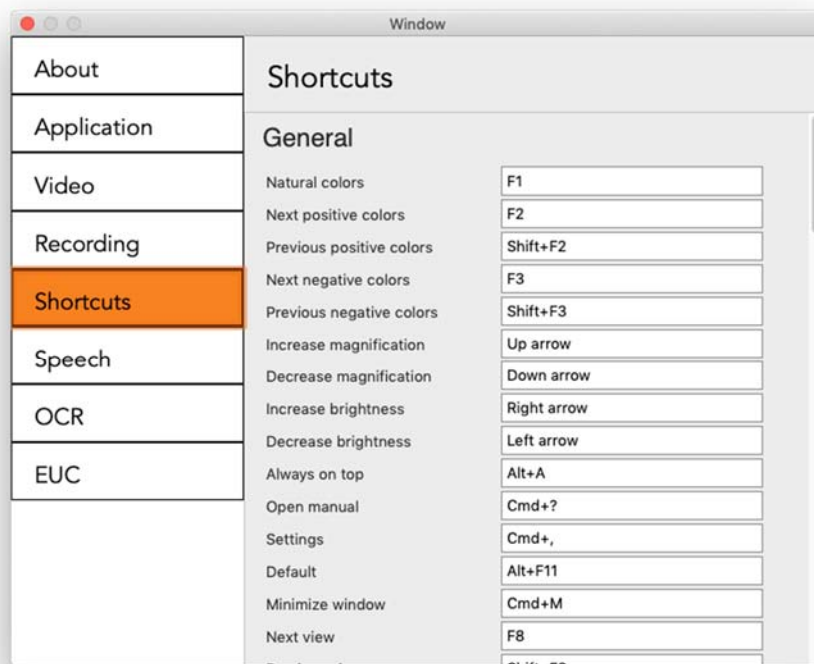
Frame rate

The recording frame rate, the number of images recorded per second, can be set from 10 to 30 frames per second. A lower frame rate means a poorer quality video recording, but takes up less space on the hard disc.

Record sound

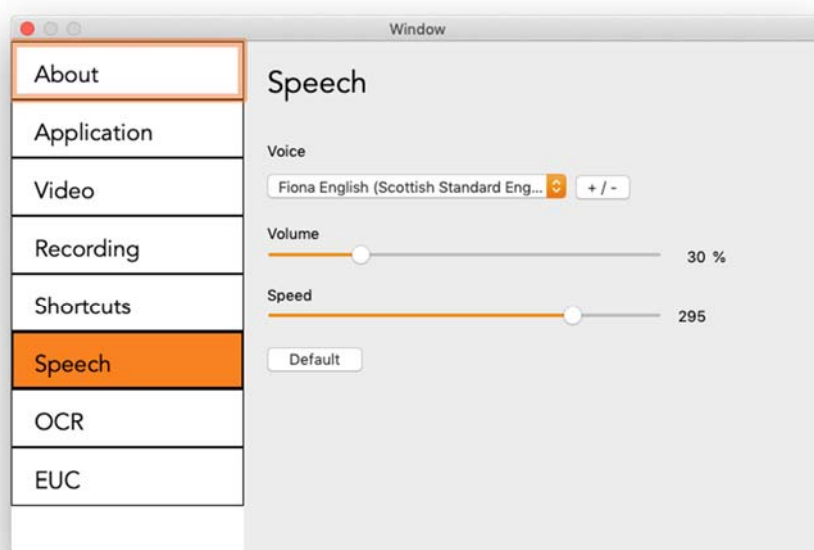
If your computer has a microphone (internal or external), sound can be added to the recording.

4.5.5 Short cut commands



Here the short cut commands used for the application can be changed. To change a short cut command, tab to the command that is to be changed and enter the new keyboard combination. If a combination already being used for another command is entered, the other command will be erased. A new keyboard combination will need to be entered for the other command.

4.5.6 Speech Settings



Voice

If several voices are available, the user can choose between them.

+ / -

Opens a new dialog where you can choose which voices should be available.

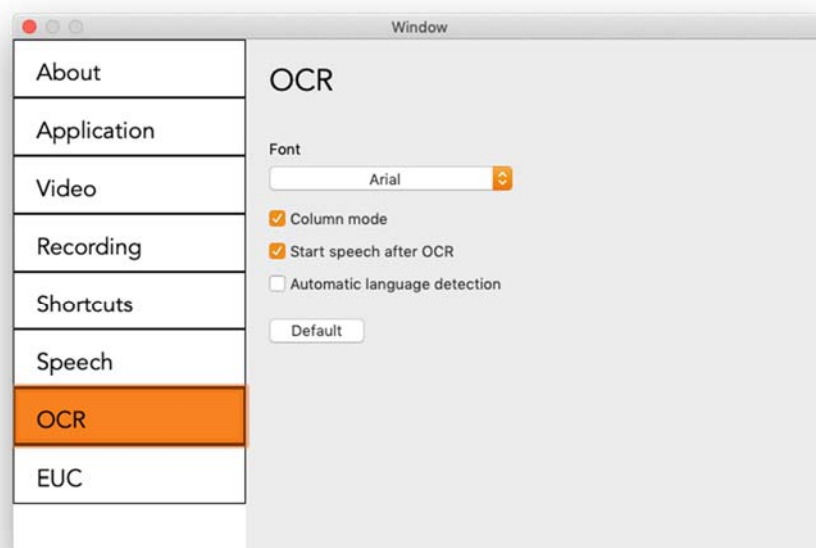
Volume

Setting the sound level of the voice.

Speed

Setting the speaking speed.

4.5.7 OCR Settings



Typeface

Here the user can set the typeface used for viewing text that has been OCR-processed. The typeface in use has no effect on the OCR-processing.

Column mode

When this setting is active, the OCR engine processes the text in columns, which is appropriate if it is a newspaper text that is to be processed.

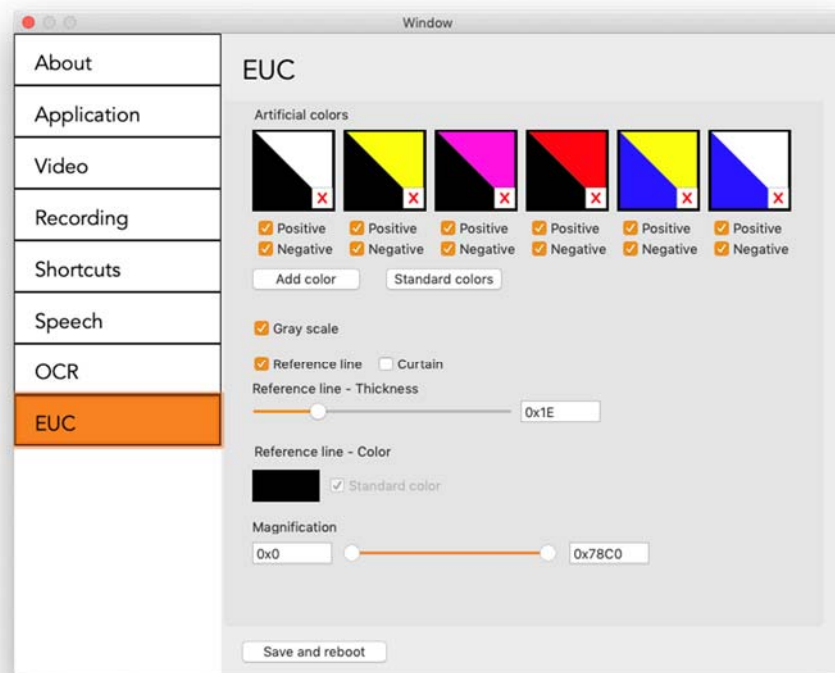
Start speech after OCR

If this box is ticked, text will automatically be read aloud after an image has been OCR-processed.

Automatic language detection

When this function is active, the application will try to detect the language of the text and change the voice to the detected language. Automatic language detection uses the languages of the voices made available in speech settings.

4.5.8 EUC



The camera can be configured under this tab. If you wish to save changes in the camera, press "Save and reboot". When you do this, the camera restarts and the configuration has been saved.

Artificial colours

It is possible remove and change the cameras artificial colours.

- To remove a colour combination, press X
- To add to a colour combination, press enter.
- To change a colour combination, press one of the triangular zones and a colour dialogue will appear. Select colours and press OK.
- To remove either the positive or the negative component. Click out box Positive or Negative.
- To restore the colours, press Standard.

Grey scale

Choose if you wish to have grey scale or not.

Reference line

Set the size and colour of the reference line and choose if you wish to have reference line, bar or both.

Magnification

Set the maximum and minimum magnification.

4.6 Quality of OCR processing

In order to optimize the results of the OCR conversion, you should bear in mind the following.

- Ensure the magnification is sufficient. Very small text produces poor results in the OCR software. A minimum of 12pt is recommended for the lowest magnification on the reading camera.
- Certain fonts can be difficult for the OCR engine to interpret.
- It is important that the text contrast is sufficient.
- It is important that the OCR engine's language is the same as that of the text.

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