

User Manual

MagniLink S - Mac

LVI Low Vision International

Verkstadsgatan 5

Tel: +46 470-727700

info@lvi.se

SE-352 46 Växjö

Faks: +46 470-727725

www.lvi.se

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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 magnifying TV- and computer systems for visually impaired. New products are developed in close cooperation with users and professional personnel of vision rehabilitation. LVI is a Quality System Certified ISO 9001 and Environmental System Certified ISO 14001 company.

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 Introduction to the MagniLink S


Thank you for choosing this video magnifier. We aim to ensure that you are completely satisfied with your choice of supplier and reading aid.

The MagniLink S is a portable camera system with autofocus, which can be connected to a computer or directly to an external monitor. The system is controlled via a keyboard and/or control box. MagniLink S is available in a number of different models. The following choices are available:

- Camera (two options available; Standard Definition (SD) or High Definition (HD)).
- Connection (choose between connection to a computer (USB 3.0 or USB 2.0), an external monitor (HDMI) or to both a computer and an external monitor (USB and HDMI)).
- Software (for a system with a HD camera and a USB-3.0 connection, software with OCR functionality can be selected).



Model	Camera	Connection	Panel	LED	OCR
MLS-C01	SD	USB	No	No	No
MLS-M01	SD	HDMI	Yes	No	No
MLS-M02	HD	HDMI	Yes	Yes	No
MLS-CM01	SD	HDMI/USB	Yes	Yes	No
MLS-CM02	HD	HDMI/USB	Yes	Yes	No
MLS-CM03	HD	HDMI/USB	Yes	Yes	Yes
MLS-CM03-MAC	HD	HDMI/USB	Yes	Yes	Yes

	<p>MagniLink S meets all the requirements for CE marking of medical devices in accordance with Directive 93/42/EEG. Our products comply with MDD 93/42/EEC with additions from Directive 2007/47/EC.</p>
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3 Safety information

The reading aid is only intended for indoor use and must be used in accordance with the following safety instructions.

- Use only the power adaptor supplied with MagniLink S. If the wrong type of adaptor is used for operation of MagniLink S, this can cause damage to the system.
- Units such as HDMI monitors and/or computers that are to be connected to the system must comply with the appropriate safety regulations for their country of use.
- Never turn on or use the product if it has been exposed to water, rain or other liquids. Pull out the USB cable and allow trained service personnel to carry out an inspection of the product before it is used again.
- Place the power cord in such a way that you can neither trip over it or that crush damages can occur.
- If the product is moved from the cold into a warm room, condensation (moisture) can form inside the unit or on the camera lens. To prevent condensation forming, the units should be installed in the room at least 30 minutes prior to usage.
- If the system requires cleaning, pull out all cables and use a slightly damp (not wet) cloth. Use only water or a cleaning agent that is intended for monitors and computers.
- Do not rely 100 per cent on the results of an OCR conversion; the OCR engine can misinterpret the text. This is particularly important to bear in mind when processing sensitive information such as a medical prescription.
- Make no further adjustments, even if the product does not function normally after following the functional descriptions. Pull out the USB cable and contact service personnel or the product distributor. Only use spare parts that are specified by LVI

If in doubt, contact your supplier.

Warning



MagniLink S is supplied packed in a plastic bag. To avoid risk of suffocation, keep the bag out of the reach of children and infants.

4 Unpacking

The system is supplied in a box with the following contents:



- Reading camera
- USB cables
- Case
- USB memory stick with software
- Polishing cloth
- User Guide
- Power adaptor*
- HDMI to HDMI cable*
- HDMI to DVI cable*

*Not included with model MLS-C01 since its power is always provided by the computer and it cannot be connected to a monitor.

Check first that the box has no damage to its exterior. In the event of damage, contact the delivery company and file a notification of damage.

Open the box and take out the MagniLink S; remove the white packaging. For further information on installation, please see the chapter on Installation of hardware page 14.

4.1 Packaging

The packaging consists of the following packaging material (LVI recommends that the packaging be kept in case you have to return the system or you need to move it):

- Packing material (EPP)
- Box (corrugated cardboard)
- Polyethylene (LDPE4)

For sorting and collection of packaging material, please call the packaging collection customer service department for information on the rules that apply in your municipality.

5 Accessories

The following accessories can be ordered with MagniLink S.



External control box (MLS-A100).



Larger external control box (MLV-A110A).



MagniLink Reading Table (MLRT), portable reading table.



MagniLink Docking Station (MLS-A101), stationary reading table.



LVI Monitor 19" (MLV-A103) and 23" (MLV-A104).



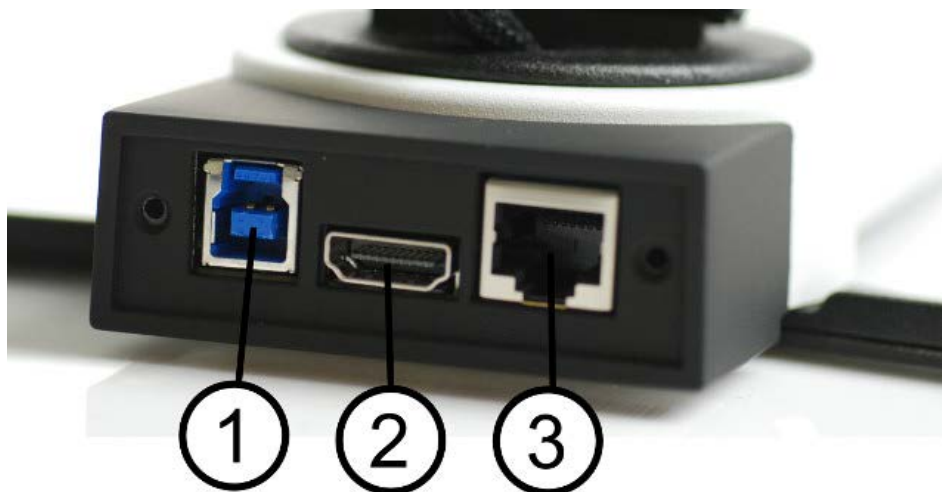
OCR functionality (MLS-A102, MLS-A102-MAC). It is possible to upgrade an **MLS-CM02** to an **MLS-CM03** and acquire OCR functionality for the software.

6 Hardware

6.1 Installation of hardware



Open the camera's arm and pull out the camera's supporting legs. It is not possible to manipulate the camera's arm until the supporting legs have been extended.



On the back of the camera there are several connection options. The connection options available depend on the camera model.

1. **USB connection**

In addition to transferring images to a computer, the USB connection is used to provide power to the system.

2. **HDMI connection**

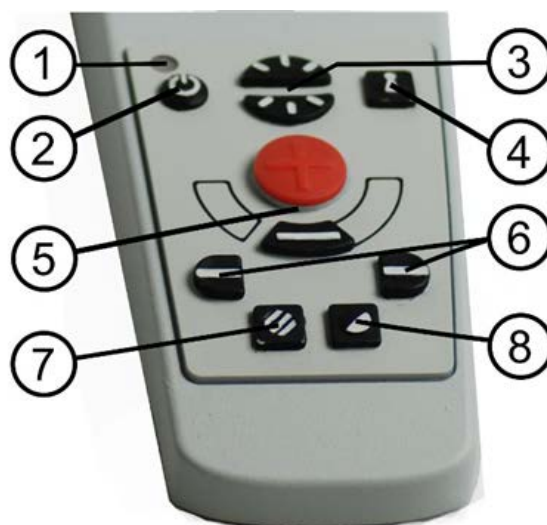
Here the camera can be connected to a monitor that supports HDMI or DVI.

3. External control panel

An external control panel can be connected via this input.

6.2 Using the hardware

6.2.1 Control box



1. LED

A green light indicates that the system is on. A flashing green light means that the system is starting up. A slowly flashing yellow light indicates standby. A red light indicates that something is wrong in the system. See the chapter on Troubleshooting page 33.

2. Power on/off

Press to start or shut down the system.

3. Lighting configuration

Used to configure the light intensity in order to optimize reading conditions. Press the upper half to increase the light intensity and the lower half to decrease it. For systems that have LED lighting, the intensity is adjusted by holding down the button (7).

4. Autofocus on/off

Press the button once to lock the focus. This can be used when you wish to write by hand. Autofocus is not affected by the pen or your hand. Press the button a second time, to reactivate autofocus.

5. Zoom control

Used to set the zoom. To reduce the zoom, press the lower key (minus) and to increase the zoom, pressure the upper key (plus).

6. Reference line/Bar

Adjust the position of the reference line. Press the right-hand

button to move the horizontal line down. Hold the button in to change the reference line to vertical and move it to the left. The reference line then becomes a horizontal bar which diminishes the viewing area. To make the bar vertical, press the button again. The left button gives the opposite result.

7. **Picture mode**

Press the button to switch the picture mode between natural colours and grey scale.

Lighting adjustment

Hold the button down to temporarily enable adjustment of the lighting via the lighting configuration (3). When the lighting configuration (3) is used to adjust the lighting, there is no switching between colour and grey scale (only possible if the system has LED lighting).

Mirroring

A mirror image can be obtained by holding the button down for three seconds.

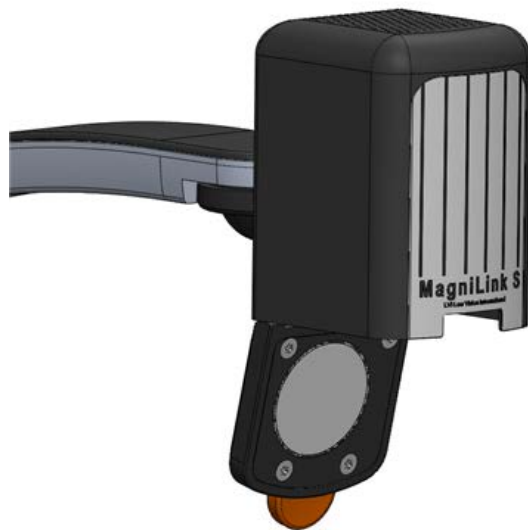
8. **High contrast modes with artificial colours**

Press the key to switch between the various colour combinations.

Rotation

By holding the button down for three seconds, the image can be rotated 180 degrees.

6.2.2 Position sensor



MagniLink S is equipped with a position sensor that is used to switch between reading mode (the user points the camera down and flips the lens into place) and distance mode (the user opens the lens). The settings for both modes are automatically saved when you switch from one to the other.

Settings that are automatically saved for these modes are:

- Artificial colours
- Negative/Positive/Natural colours
- Light
- Magnification level
- Reference line/Bar
- Rotation of camera image
- Mirroring of camera image

7 Mac software

The following pages describe the installation and use of the MagniLink S software for Mac.

7.1 Minimum system requirements

- Mac OS X Version 10.6 Snow Leopard, 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.

7.2 Recommended system requirements

- Mac OS X Version 10.6 Snow Leopard, 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.

7.3 Installation of software

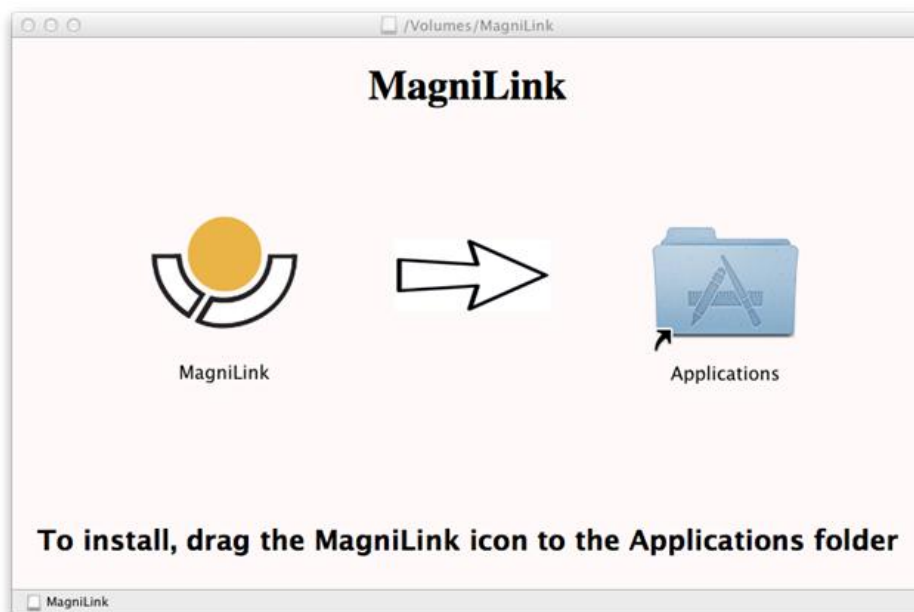
To install MagniLink S on your Mac, insert the USB stick containing the software into one of the computer's USB ports. Begin the installation by double clicking on the "Software Mac.dmg" file located in the "Software Mac" folder. This will open the following window.



Continue the installation by double clicking the MagniLink.dmg file.



Read the text in the "License Agreement" dialogue box, and accept the license agreement by clicking the "Agree" button. After clicking "Agree", the following window will open.



To install MagniLink, drag the MagniLink icon to the "Applications" folder. This completes the installation.

7.4 Using the software

7.4.1 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 -> Hardware -> 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 + Alt + F5	Start/Stop video recording Press fn + Alt + 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 + Alt + F5 once again.
fn + Alt + Shift + F5	Start video recording – fast

	<p>Press fn + Alt + 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.</p>
fn + F6	<p>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.</p>
fn + Shift + F6	<p>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.</p>
fn + Alt + F6	<p>View stored videos Press fn + Alt + 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.</p>
fn + Alt + Shift + F6	<p>View last stored video – fast Press fn + Alt + 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 + Alt + F6.</p>
fn + F8	<p>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.</p>
fn + Alt + F9	<p>Information and settings window Pressing fn + Alt + F9 opens up a window in which you can adjust different settings and optimize your MLS. The window contains different headings.</p>
fn + Alt + F11	<p>Return to default settings Press fn + Alt + F11 to return to the default settings (normal window, natural colours and normal brightness).</p>
Arrow up	<p>Zoom in</p>
Arrow down	<p>Zoom out</p>
Alt + O	<p>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.</p>

Arrow left	Decrease brightness
Arrow right	Increase brightness
Alt + Arrow left	Guiding line left/up
Alt + Arrow up	Guiding line left/up
Alt + Arrow right	Guiding line right/down
Alt + Arrow down	Guiding line right/down
Alt + 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 Word, while viewing the camera image
Cmd + M	Minimizes the application
Alt + R	Rotates the camera picture clockwise Each time you press this key combination the picture rotates 90° (90°, 180°, 270°, 0°).
Shift + Alt + R	Rotates the camera picture counter clockwise Each time you press this key combination the picture rotates 90° counter clockwise (270°, 180°, 90°, 0°).
Alt + I	Mirror camera image By pressing Alt + 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.
Alt + F	Freeze camera image By pressing this key combination, the camera image is frozen until the key combination is pressed again.
Alt + 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.
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.

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.

Alt + 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.

Alt + 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.

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 Word.

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 + Alt + 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: Side view, line view, word view and a silent mode where the text moves sideways on the screen.

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/next" command is entered. There are three modes: sentence, word and character.
- 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.

7.4.2 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.

7.4.3 Information and settings window

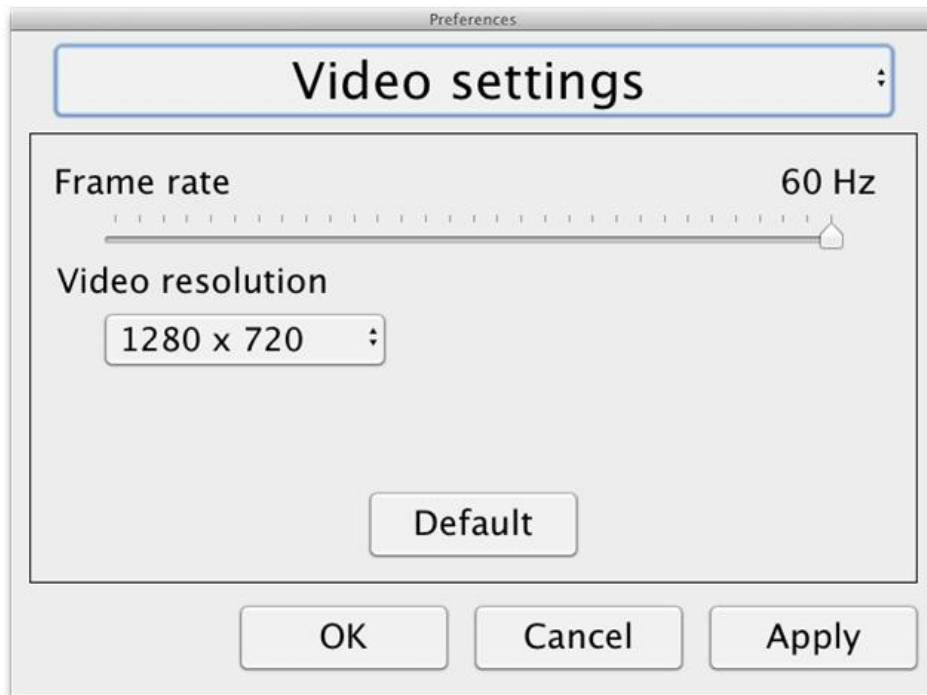
The information and settings window consists of different headings that all contain either application information or application settings options.

7.4.3.1 About the application



This heading contains the version number of your software and information regarding copyright law. It is also possible to activate the OCR-functionality here if there is no internet connection available. Press “OCR Activation” and a dialog will appear where you can select the license file located on the USB-stick.

7.4.3.2 Video Settings



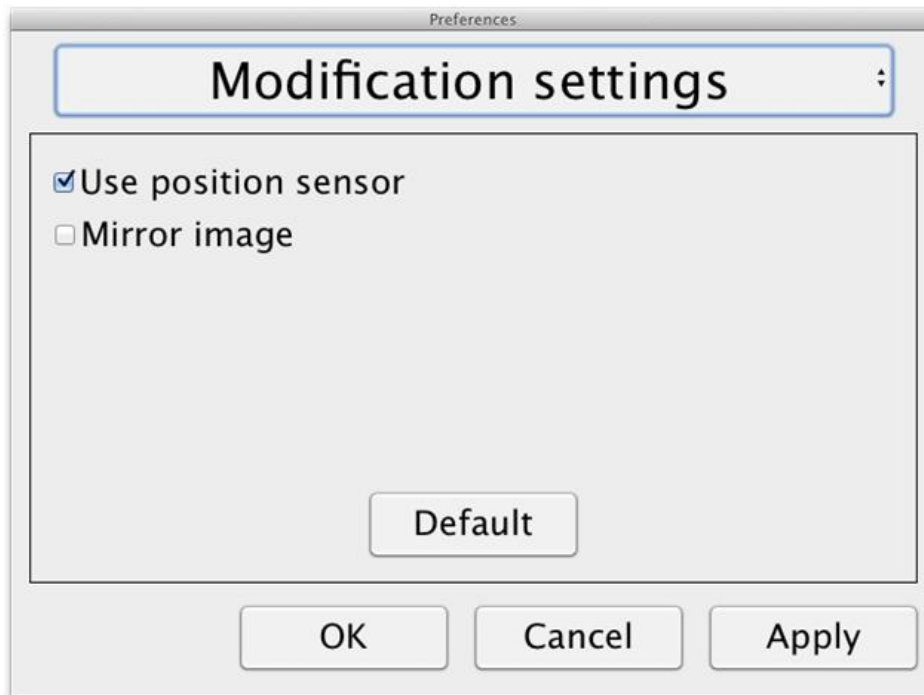
Frame rate

Allows you to limit the camera's frame rate.

Resolution

Allows you to set the camera's resolution. The number of possible resolutions depends on whether the camera is connected to a USB-3 or USB-2 port. If the camera is connected to a USB-3 port the resolution used is always 1280 x 720. If the camera is connected to a USB-2 port it is possible to choose between 1280 x 720 and 640 x 480. Higher resolution means a clearer picture but results in a lower frame rate.

7.4.3.3 Modification Settings



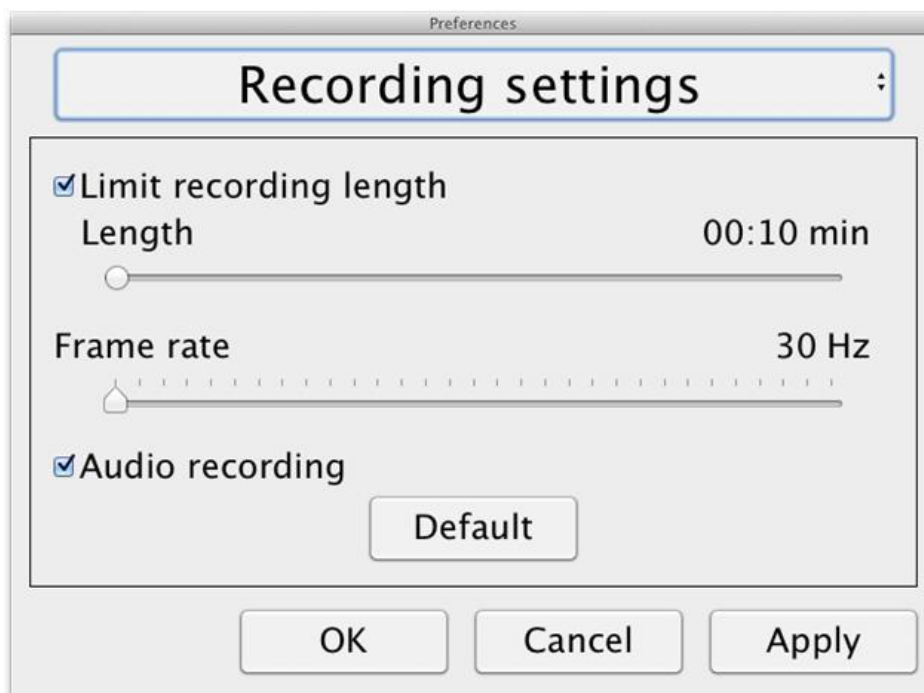
Use positioning sensors

When this setting is activated, the application remembers the settings for distance mode and reading mode. See the Position sensor page 17 section for more information.

Mirrored image

When this setting is activated, the camera image is mirrored.

7.4.3.4 Recording Settings



Limit recording length

The video recording can be limited in steps of one second from 10 seconds up to 10 minutes. If "Limit recording length" is unchecked, then the video recording length is unlimited, which means that the video recording will continue until it runs out of disk space or is stopped manually. Even if the video recording length is unlimited it will not be possible to record more than 60 minutes per video file.

Frame rate

The recording frame rate can be set between 30 and 60 frames per second. A lower frame rate provides lower quality video, but will take less space on the hard disk.

Audio recording

If the computer is equipped with a microphone (internal or external) sound can be added to the video recording by activating this setting.

7.4.3.5 OCR settings

This heading is only available if the camera supports OCR.



Languages

Makes it possible to change the languages that the OCR engine is to interpret. It is possible to select several languages. To achieve a good result, it is important that the languages set is the same as that used in the text.

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.

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. The application will only attempt to identify among selected languages and only works for English, Swedish, Norwegian, German, Danish, Dutch, Spanish, Finnish and French. If a text on a different language is to be OCR-processed, then this function needs to be deactivated.

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.

Smart start

Smart start works as follows. If a text has already been read aloud and a new OCR conversion is starting, the reading will start from the position where the reading of the old text stopped.

7.4.3.5.1 Quality of OCR processing

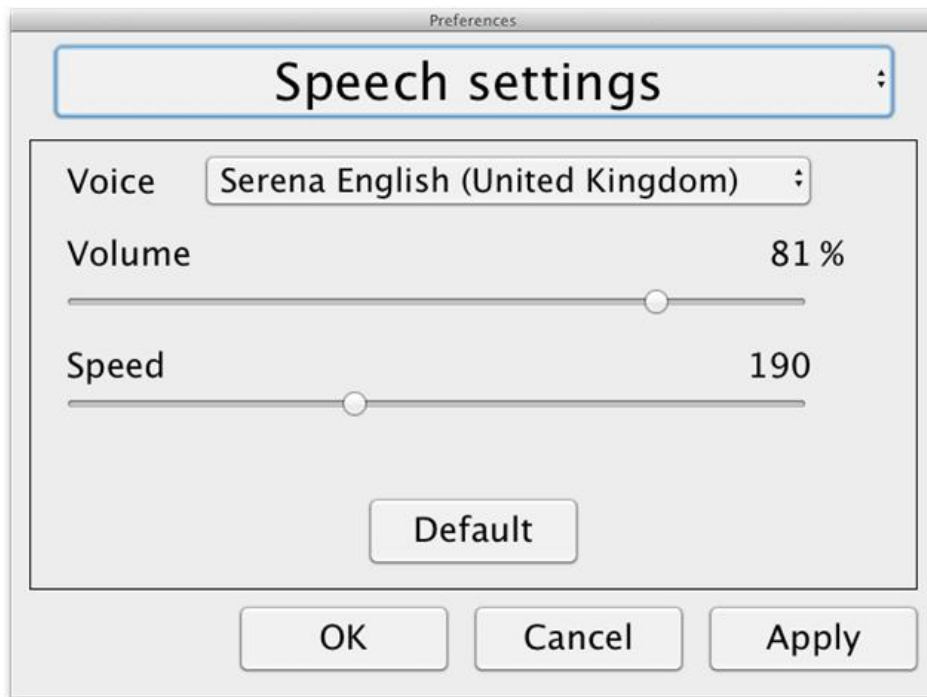
To achieve the best possible results from OCR processing, bear the following in mind.

- 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.
- Avoid glossy paper as this results in reflections in the image. This impairs the results of the OCR conversion. If you intend to use glossy paper, we recommend that the light on the unit is switched off.
- 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.

- The camera's resolution should be set at 1280x720, see Video Settings for more information.

7.4.3.6 Speech Settings

This heading is only available if the camera supports OCR.



Voice

Here the user can select among all available voices.

Volume

Set the sound level for the voice.

Speed

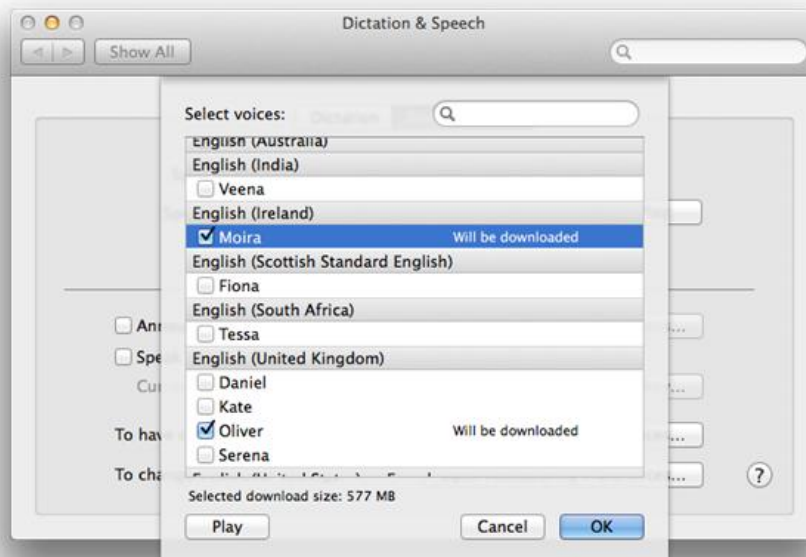
Set the speed of the voice.

7.5 Download voices

In Mac OS X 10.7 or later, it is possible to download voices for different languages. Go to "System Preferences" -> "Dictation and Speech" (The exact name and look of the dialogs can vary some depending on the version of Mac OS X).



Choose the tab "Text to Speech", click on "System voice" and select "Customize".



Check to voices you wish to download and click OK.

8 Working with the reading camera

Your reading camera is now ready to use. It is important that the workplace around your MagniLink is comfortable, and that you sit correctly. This is so that you can use the camera for as long as possible without putting undue strain and stress on your neck and back.

You should bear the following in mind:

- Your chair should be positioned close to the table on which the equipment is located, and you should not sit in the chair for too long. We recommend a good office chair with adjustable height.
- The seat of the chair should be at a height that does not cause your legs to become numb; legs should be at an angle of 90 degrees and you should rest your feet on the floor.
- The reading table should be at a height at which you can rest your lower arm horizontally on it. It is important that the table is neither too high nor too low for you. The ideal solution is if the screen is slightly below eye level and in as straight a line in front of you as possible.
- Shut out daylight. Lights in the ceiling, table lamps and light from windows can cause reflections on the monitor. For this reason, avoid placing lights where they shine directly at the screen or at yourself.

9 Troubleshooting

If the indicator light is flashing:

A red light or a flashing red light indicates a system error. Restart the system by disconnecting and reconnecting all cables and rebooting the system. If a red light is still displayed, contact your service technician.

10 Technical information

Magnifying area SD camera	1,6 - 75 x (15,4" 16:9 screen)
Magnifying area HD camera	1,4 - 75 x (15,4" 16:9 screen)
Power output	5 W
Power output, standby	1.7 W
Weight	1.7 kg
Refresh rate	60 Hz
Dimensions BxDxH	350x270x390 mm
Operational temperature	0 to 30°C
Storage and transportation temperature	-20 to 60°C



Disposal of old electrical and electronic equipment (applies for EU countries and all other European countries that have specific collection systems)

If the product or its packaging has this symbol on it, it is not to be handled as regular domestic waste. It should instead be deposited at a suitable collection centre for the recycling of electrical and electronic equipment. By ensuring that this product is properly taken care of, you are helping to prevent the negative impact on health and the environment that might otherwise result from inappropriate disposal of this product. Recycling helps in the management of our natural resources. For more detailed information regarding the recycling of this product, you can contact your municipality, your waste management company or the store where you purchased the product.

11 Declaration of Conformity

DECLARATION OF CONFORMITY

according to the Medical Devices Directive, 93/42/EEC with amendments from directive 2007/47/EC

Type of equipment:	Reading Aid
Brand name or trade mark:	MagniLink S
Type designation:	MLS- M01, M02, C01, CM01, CM02, CM03
Product class:	Class 1.
Manufacturer:	LVI Low Vision International AB
Address	Verkstadsgratan 5 S-352 46 Växjö Sweden
Web:	http://www.lvi.se
Phone:	+46 470 72 77 00
Fax:	+46 470 72 77 25

As the manufacturer, we declare under our sole responsibility that:

- the product follows the provisions of the Council Directive 93/42/EEC with amendments from directive 2007/47/EC.
- we will keep the technical documentation described in section 3 of Annex VII available to the national authorities for a period ending at least five years after the last product has been manufactured.
- the device meets the Essential Requirements of Annex 1 which applies to it, taken into account the intended purpose of the device.
- to follow the requirements regarding products placed on the market as described in section 4 of Annex VII.



Manufacturer



Manufacturer's authorized representative

Date

12-11-2012

Signature

Erik Bondemark

Erik Bondemark

Position

Managing Director

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