User Manual

MagniLink Vision TTS

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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 Vision TTS

Thank you for choosing this video magnifier. Our aim is for you to be satisfied with your choice of supplier and reading aid.

MagniLink Vision TTS is a combined reading camera and reading machine. The reading camera includes features such as autofocus, several artificial colours and the potential to set the magnification. The reading machine makes it possible to OCR-process a text and have it read aloud.

$C\ E$	MagniLink Vision meets all the requirements for CE marking of medical devices in accordance with Directive 93/94/EEC. Our products comply with MDD 93/94/EEC with additions from Directive 2007/47/EC.

3 Safety information

- Only use the power adaptor supplied with the product. Using an incorrect type of power adapter may cause damage to the system.

- Never operate the product if it has been exposed to water or other liquids. Damaged or wet product can cause electric shocks or fire.

- Place the power cord in such a way that you can neither trip over it or that crush damages can occur.

- Place the system at least 10 cm from the edge of the table. When moving the reading table, make sure your hands are not below or behind the reading table, as there is a risk of your fingers becoming trapped. When the reading table is in its outermost position, an excessive load can cause the system to tip over, resulting in personal injury.

- If the system has to be moved, do not lift at the screen or reading table as these are moving parts.

- 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 problems with condensation, the apparatus should be installed in the room at least 30 minutes prior to usage.

- If the system requires cleaning, detach all cables. Use a slightly damp (not wet) cloth to clean the system. 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.

If in doubt, contact your supplier.

Warning	
	The product 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:

- Combined reading machine and reading camera
- User Guide
- USB memory stick
- Power adaptor
- Hand control

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

Open the box and take out the MagniLink Vision; remove the packaging.

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.

Note that the product and its accessories must be recycled as electronic waste. A worn-out battery is recycled as electronic waste.
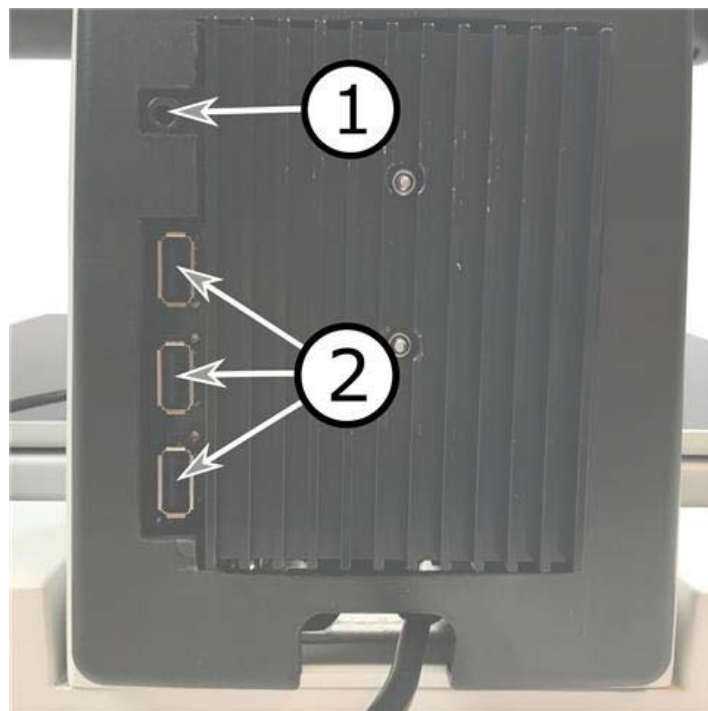
5 Installation

Place your MagniLink Vision far enough in on the table in front of your seat, but at least 10 cm from the edge of the table. Remember that the reading table can be pulled out approximately 30 cm in three directions. MagniLink Vision has a low total weight. It is therefore very important to position the system in the right place on your table, particularly when you are using the reading table in its most extended position. An excessive load in this position can cause the system to tip over.

Connect the power cable to the wall socket and press the start button. The unit is now ready to be used. The screen can be tilted approximately 10 degrees backwards and lowered 8.5 cm from its highest position. Use the grips on both sides of the screen and move it to find the desired position. Release the brakes on the reading table and start using MagniLink Vision.

The following connection options can be found on the rear of the unit.

1. **Port for headphones**
   Here you can plug in headphones.
2. **USB ports**
   The unit has three USB ports. The hand control must be connected to one of these ports. If you wish to save or open a document, you can connect a USB memory stick.
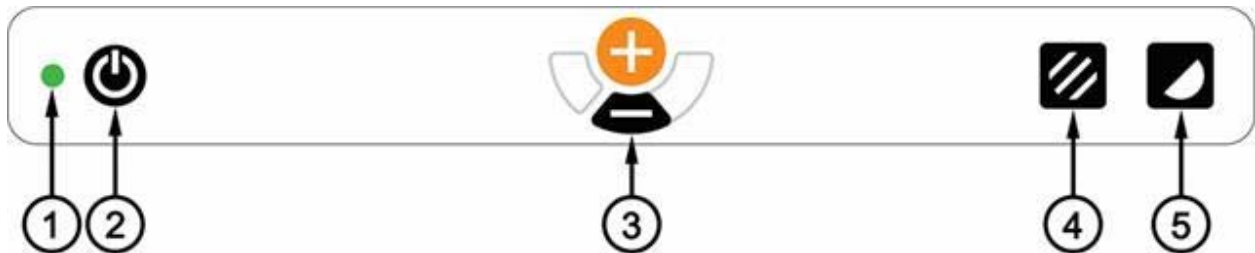
6   Use

MagniLink Vision TTS is started from the panel. LVI's logo is displayed on the screen when the system is starting, and the picture from the CCTV camera is shown after ten seconds. After a further 40 seconds, the reading machine starts with the message "Reading machine ready". Using the hand control, it is now possible to switch between CCTV mode and OCR mode. When you are in CCTV mode, the panel is used to control the system. When you are in OCR mode, the hand control is used to control the system.

6.1   Panels

Three panels are available for MagniLink Vision. The functions of each panel are explained below.

6.1.1   3 Press

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".

2. **Power on/off**
   Press to start or shut down the system.

3. **Magnification control**
   Used to set the magnification. To reduce the magnification, press the lower key (minus) and to increase the magnification, pressure the upper key (plus).

4. **Picture mode and Lighting on/off**
   Press the button to switch the picture mode between natural colours and grey scale.
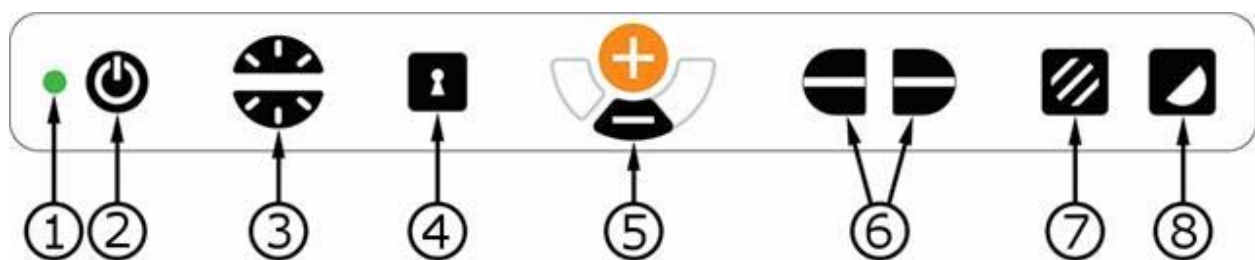   The lights can be switched on and off by holding the button down for three seconds. The system switches automatically between ROPC (Reading Optimized Picture Control) and DPC (Dynamic Picture Control).

5. **High contrast mode with artificial colours**
Press the button to switch between the various colour combinations. These colours are available as standard:

Background/Text	Background/Text
White/Black	Red/Black
Black/White	Black/Red
Yellow/Black	Yellow/Blue
Black/Yellow	Blue/Yellow
Green/Black	White/Blue
Black/Green	Blue/White

6.1.2 5 Press

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".

2. **Power on/off**
Press to start or shut down the system.

3. **Light and contrast control**
In picture mode, this control is used to configure the light intensity in order to optimise reading conditions. Press the upper half to increase the light intensity and the lower half to decrease it. In high contrast mode, it is used to set the contrast level. If you hold in the Picture mode button (7), the level of lighting is adjusted instead with the Light control.

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. **Magnification control**
   Used to set the magnification. To reduce the magnification, press the lower key (minus) and to increase the magnification, pressure the upper key (plus).

6. **Reference line/Bar**
   Adjust the position of the reference line. Press the right-hand button to move the reference line down horizontally. 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-hand section of the control has the opposite effect.

7. **Picture mode**
   Press the button to switch the image between natural colours and grey scale.

   Lighting adjustment
   Hold the button down to temporarily enable adjustment of the lighting via the lighting configuration (3). This can be used by light-sensitive users or when reading on glossy paper. The system automatically switches between ROPC (Reading Optimized Picture Control) and DPC (Dynamic Picture Control) when the lighting reaches a certain level. When the lighting configuration (3) is used to adjust the lighting, there is no switching between colour and grey scale.
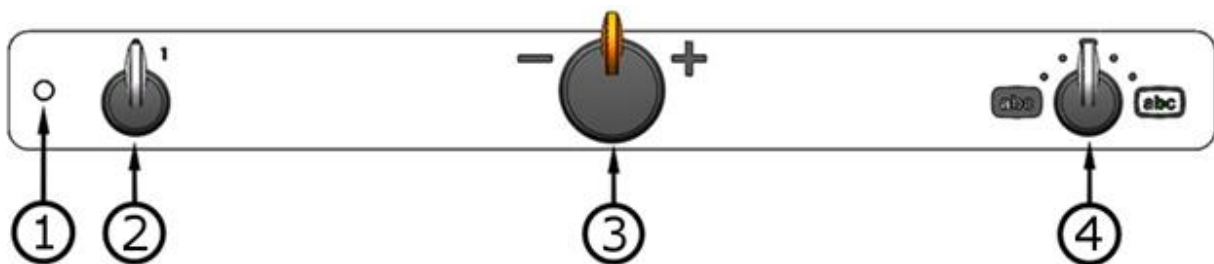
   Lights off/on
   The lights can be switched on and off by holding the button down for three seconds. The system switches automatically between ROPC (Reading Optimized Picture Control) and DPC (Dynamic Picture Control).

8. **High contrast mode with artificial colours**
    Press the button to switch between the various colour
    combinations. These colours are available as standard:

Background/Text	Background/Text
White/Black	Red/Black
Black/White	Black/Red
Yellow/Black	Yellow/Blue
Black/Yellow	Blue/Yellow
Green/Black	White/Blue
Black/Green	Blue/White

6.1.3   3 Rotate

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".

2. **Power on/off**
    Rotate to start or shut down the system.

3. **Magnification control**
    Used to set the magnification. Using this control, you can select
    between 16 different magnification positions.

4. **Picture and high contrast mode**
   The picture mode is displayed on the screen when the control is straight up in its starting position. Rotate the control to the right or left to display four different high contrast modes. These colours are available as standard:

Background/Text	**Background/Text**
White/Black	Yellow/Black
Black/White	Black/Yellow

6.2 Reading table

1. **Side way direction friction adjustment**
   Set the side way friction by moving this handle. With the brake in the left end position, the reading table is unlocked. To increase friction, push the side way brake to the right (at the far right, the brake clicks into locked mode).
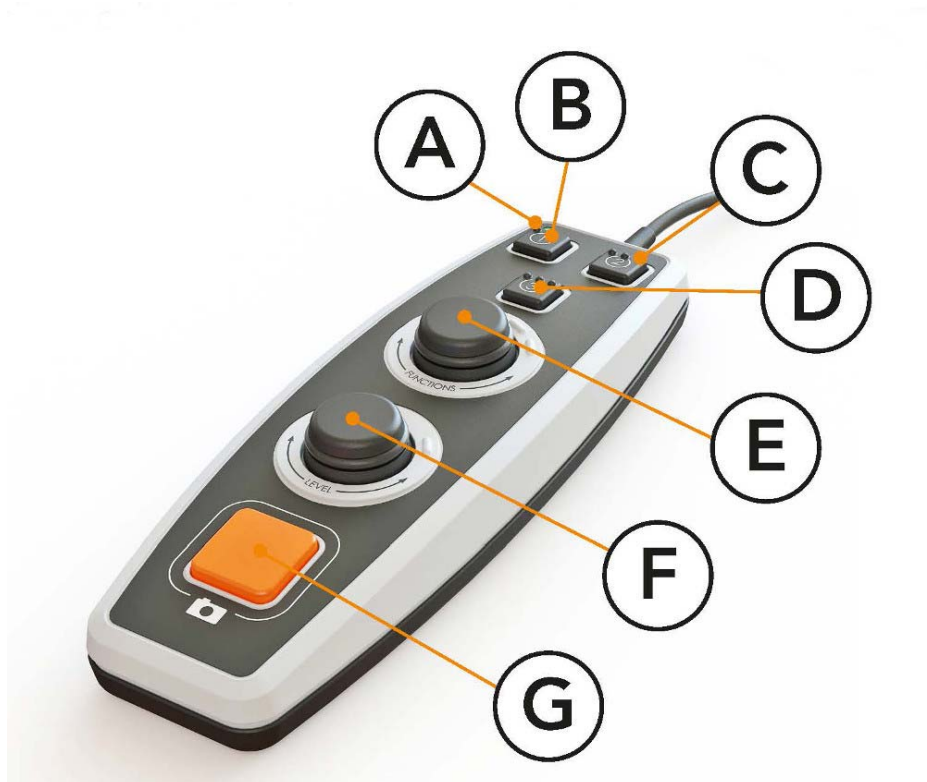
2. **Depth way direction friction adjustment**
   Set the depth way friction by moving this handle. With the brake in the near end position, the reading table is unlocked. To increase friction, push the depth way brake towards the back. Push the brake in as far as possible to lock the reading table.

6.3 Basic mode

The unit can be configured to basic or default mode. For more information, please see the chapter on Configuration page 22. Below is a description of how the hand control is used in basic mode.

The hand control consists of two combined rotary and push button controls as well as an LED and four push buttons.

A. **LED**
When the unit has started, this LED shines green. When you switch to text mode, it shines blue. When the unit is in standby, it shines white.

B. **Button for switching between camera and text mode**
This button switches between the OCR camera and the OCR-processed text.

C. **Button for switching modes**
This button switches between CCTV mode and OCR mode.

D. **Quick button for display mode**
Use this button to switch between the different display modes. There are six different display modes: "word", "line", "page", "picture", "picture and word" and "picture and line".

E. **Speed control**
When you rotate the control, you adjust the speed of reading.

F. **Volume control**
This is a combined push button and rotary control. When the control is pressed, you can start and pause the reading. When you rotate the control, you adjust the volume level.
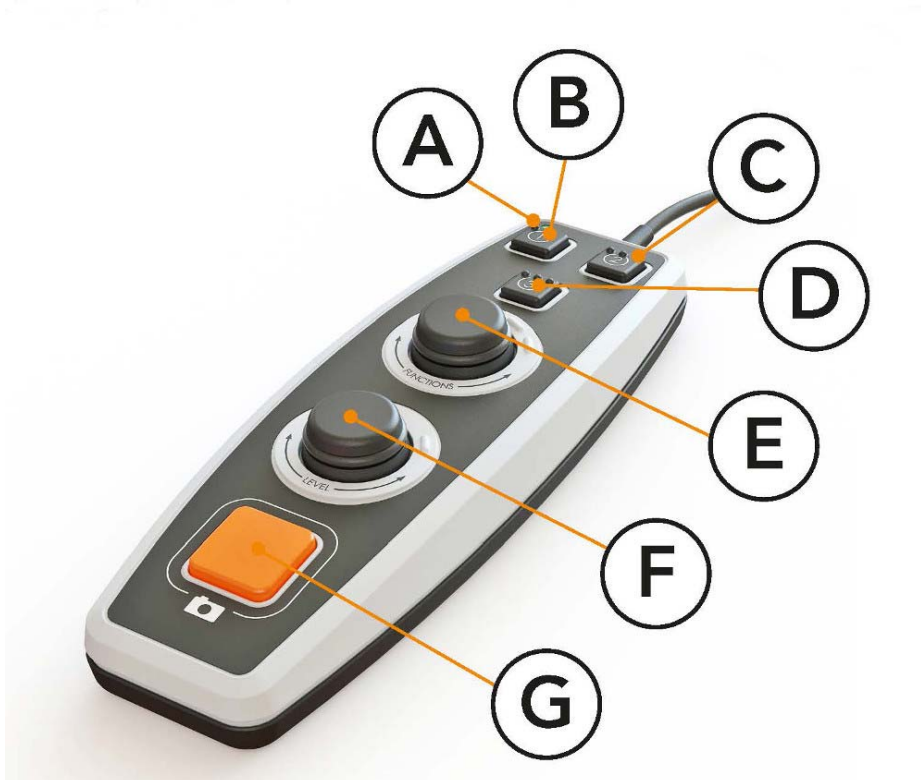
G. **OCR button**
This button is used to take a picture, OCR-process the text and read aloud the result.

6.4 Default mode

The unit can be configured to basic or default mode. For more information, please see Configuration page 22. Below is a description of how the hand control is used in default mode.

The hand control consists of two combined rotary and push button controls as well as an LED and four push buttons.

A. **LED**
When the unit has started, this LED shines green. When you switch to displaying OCR-processed text, it shines blue. When the unit is in standby, it shines white.

B. **Button for switching between camera and text mode**
This button switches between the OCR camera and the OCR-processed text.

C.   **Button for switching modes**
      This button switches between CCTV mode and OCR mode.

D.   **Quick button for navigation**
      When you press this button you are brought to navigation, and it is now possible to navigate in the text by rotating the "Level control".

E.   **Function control**
      This is a combined push button and rotary control. The control is rotated until the desired function is read aloud. Some functions have a sub-menu and pressing the control will enter this menu. Other functions have a setting that you can enable or disable by pressing the control.

F.   **Reading and Level control**
      This is a combined push button and rotary control. When the control is pressed, you can start and pause the reading. When you rotate the control, you adjust the volume level or speech speed. The control is also used to change the lighting or to navigate in the text.

G.   **OCR button**
      This button is used to take a picture, OCR-process the text and read aloud the result.

6.4.1   Functions and settings

The unit's various functions and settings are controlled using the hand control. After a period of inactivity by the user, the unit returns to its default mode. Below is a list of the unit's functions and descriptions of how they are performed.

Take a picture and start the reading
Press the OCR button(**G**) to take a picture to be OCR-processed. When the OCR conversion is complete, the reading begins.

Pause reading
Press the reading control(**F**) to pause the reading. Press it again to resume the reading.

Adjust the volume
Rotate the level control(**F**) to increase or decrease the volume.

Adjust the speech speed
Rotate the function control(**E**) until the unit says speed. Then rotate the level control(**F**) to increase or decrease the speech speed.

Save documents

Make sure that a USB memory stick is plugged into the unit. Rotate the function control(**E**) until the unit says "handle document" and then press the control. Rotate the function control again(**E**) until the unit says "save" and then press the control to save the document. The document is saved in the directory "lvi_text" as a .txt file.

Open documents

Make sure that a USB memory stick is plugged into the unit. Rotate the function control(**E**) until the unit says "handle document" and then press the control. Rotate the function control again (**E**) until the unit says "open" and then press the control to open the document. The documents must be in the directory "lvi_text" or the root directory of the USB memory stick in order for the unit to find them.

Navigate in the text

Rotate the function control(**E**) until the unit says "navigation". Then rotate the level control(**F**) to navigate forward of backwards in the text.

Change navigation mode

Rotate the function control(**E**) until the unit says "navigation" and then press the control. Then chose the navigation mode with the function control(**E**) and press the control to select. It is now possible to navigate in the text using the level control(**F**). There are five different navigation modes: "page", "block", "sentence", "word by word" and "letter by letter".

Change column mode

To change column mode, rotate the function control(**E**) until the unit says "column mode" and then press the control. Normally the column mode in on, but it is necessary to turn it off when you are processing text that you do not want to have read aloud in column form.

Change column selector

To change column selector, rotate the function control(**E**) until the unit says "column selector". It is now possible to adjust the column selector by pressing the control. There are three options: vertical, horizontal or off. When the column selector is on, only those columns that are intersected by the column selector are OCR-processed.

Change display mode

To change display mode, rotate the function control(E) until the unit says "display mode" and then press the control. Then select display mode by rotating the function control(E). When you are satisfied with your selection, press the control(E) again. There are six different display modes: "word", "line", "page", "picture", "picture and word" and "picture and line".

Change magnification

Rotate the function control(E) until the unit says "magnification". Then rotate the level control(F) to increase or decrease the magnification.

Reset to default settings

Rotate the function control(E) until the unit says "advanced settings" and then press the control. Then rotate the function control(E) until the unit says "default settings" and press the control. Confirm by pressing the function control(E) again.

Append text

To change whether text shall be appended to existing text when OCR conversion is started. Rotate the function control(E) until the unit says "advanced settings" and then press the control. Rotate the function control again (E) until the unit says "append" and then press the control to change the setting.

Change automatic language detection

Rotate the function control(E) until the unit says "advanced settings" and then press the control. Then rotate the function control(E) until the unit says "automatic language detection" and press the control.

Change reading voice

Rotate the function control(E) until the unit says "advanced settings" and then press the control. Then rotate the function control(E) until the unit says "reading voice" and press the control. Rotate the function control again(E) until the desired voice is spoken and then press the control to select the voice.

Change menu voice and language settings

Rotate the function control(E) until the unit says "advanced settings" and then press the control. Then rotate the function control(E) until the unit says "menu voice" and press the control. Rotate the function control again(E) until the desired voice is spoken and then press the control to select the voice.

Change sound profile

Rotate the function control(E) until the unit says "advanced settings" and then press the control. Then rotate the function control(E) until the unit says "sound profile" and press the control. Rotate the function control again(1) until the desired sound profile is read aloud and then press the control to select. There are three different sound profiles: Base, treble and normal.

Change font

Rotate the function control(E) until the unit says "advanced settings" and then press the control. Then rotate the function control(E) until the unit says "graphics" and press the control. Rotate the function control(E) again until the unit says "font" and press the control. Rotate the control until the desired font is spoken and press the control to select this.

Change font size

Rotate the function control(E) until the unit says "advanced settings" and then press the control. Then rotate the function control(E) until the unit says "graphics" and press the control. Rotate the function control(E) again until the unit says "font size". It is now possible to change the font size by rotating the level control(F).

Change artificial colours

Rotate the function control(E) until the unit says "advanced settings" and then press the control. Then rotate the function control(E) until the unit says "graphics" and press the control. Rotate the function control(E) again until the unit says "artificial colours" and press the control. Rotate the control until the desired colours are spoken and press the control to select these.

Change contrast level

Rotate the function control(E) until the unit says "advanced settings" and then press the control. Then rotate the function control(E) until the unit says "graphics" and press the control. Rotate the function control(E) again until the unit says "contrast level". It is now possible to change the contrast level by rotating the level control(F). This setting only has an effect if any artificial colours are selected.

Change to natural colours

Rotate the function control(E) until the unit says "advanced settings" and then press the control. Then rotate the function control(E) until the unit says "graphics" and press the control. Rotate the function control(E) again until the unit says "natural colours" and press the control.

Get information on the version of the software

Rotate the function control(E) until the unit says "advanced settings" and then press the control. Then rotate the function control(E) until the unit says "about" and press the control. Rotate the function control again(E) until the unit says "Version" and press the control. The unit will now read aloud information about the software version.

Get information about the unit's serial number

Rotate the function control(E) until the unit says "advanced settings" and then press the control. Then rotate the function control(E) until the unit says "about" and press the control. Rotate the function control again(E) until the unit says "serial number" and press the control. The unit's serial number will now be read aloud.
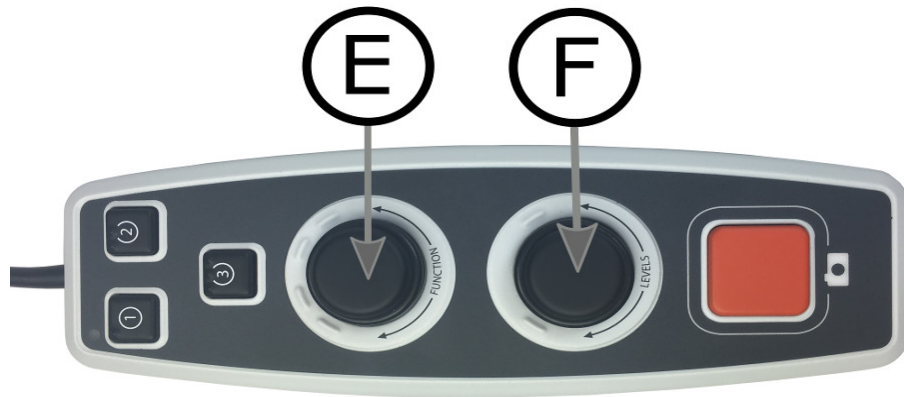
Update license

Updating the unit's license requires a USB memory stick with a license file to be plugged into the unit. Rotate the function control(E) until the unit says "advanced settings" and then press the control. Then rotate the function control(E) until the unit says "about" and press the control. Rotate the function control again(E) until the unit says "update license" and press the control. The unit will then notify you if the licence update was successful.

Update software

To update the unit's software requires a USB memory stick with new software to be plugged into the unit. Rotate the function control(E) until the unit says "advanced settings" and then press the control. Then rotate the function control(E) until the unit says "about" and press the control. Rotate the function control again(E) until the unit says "update software" and press the control. When the update is complete, the unit will notify you of this.

6.5   Configuration

It is possible to configure the system by removing menu options and by choosing standard function and quick function. It is also possible to switch the unit to a basic mode. To access the configuration menus. Press down the function control(**E**) and level control(**F**) and keep them held down until the system says "Configuring pressure for selecting standard function". This will bring you to the main menu for configuration. The following option will be found in the main menu.

Select standard function

To select which menu the unit will return to after a period of inactivity. Rotate the function control(**E**) until the unit says "standard function" and then press the control. Rotate the function control again(**E**) until the desired option is read aloud and then press the control. It is possible to choose between volume, speed, magnification and navigation.

Select quick function

To select which menu the unit will return to when you press the quick button(**4**). Rotate the function control(**E**) until the unit says "quick function" and then press the control. Rotate the function control again(**E**) until the desired option is read aloud and then press the control. It is possible to choose between volume, speed, magnification and navigation.

Remove functions

To remove functions. Rotate the function control(**E**) until the unit says "functions" and then press the control. It is now possible to navigate and remove functions using the function control. Press the control to remove or restore the selected function. When you have selected the functions you wish to be available, navigate with the function control(**E**) until the unit says "back" and press the control. When you have done this you will return to the main menu for configuration.

Basic configuration

To switch the unit to basic configuration. Rotate the function control(**E**) until the unit says "basic configuration" and then press the control.

Restore default configuration

To restore the configuration to the default configuration. Rotate the function control(**E**) until the unit says "default configuration" and then press the control.

Save and go back

To save and leave the configuration settings, rotate the function control(**E**) until the unit says "save configuration" and then press the control.

Go back without saving

To leave the configuration without saving, rotate the function control(**E**) until the unit says "close configuration" and then press the control.

6.6   Extra voices on a USB stick

It can be possible to use voices that are on an external USB drive. To enable the voices, connect the USB stick to one of the unit's USB ports and wait until the unit says "voices are ready to be used". It is then possible to go into the menu and change voices and language settings to one of the new voices.

6.7   Quality of OCR conversion

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

- Make sure that the text is large enough. If the text is too small, the OCR results will be bad. At least 12pt is recommended.
- 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 chosen spoken language is the same as that of the text.
- The paper should be rotated as little as possible.

7   Ergonomics

It is important that the workplace around your system is comfortable, and that you sit correctly. This is so that you can use it 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.

- Shield 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.

- If you use the device for long periods of time, there is a risk of repeated movements causing you pain in your neck, shoulders and back. Your eyes can also get tired from looking at a screen for too long.

8   Troubleshooting

No image is displayed after you start the system:

- Check that the power is on.
- Check that all connectors are properly connected as explained in the 'Installation' section.

The LED to the left of the start button shines red:

- Something is wrong and MagniLink Vision cannot be used. Press the start button once and MagniLink Vision will make three attempts to restart. If the system still fails to start, the LED will shine red again. Disconnect the power cable and contact service personnel.

The LED flashes red:

- The incorrect voltage is being supplied from the mains adapter. If the fault persists, disconnect the power cable and contact service personnel.

If the unit gives the voice response "No text in the document" after an OCR conversion.

- Check that the document is not rotated through more than 15 degrees.

Never remove any panels or the casing in order to attempt to repair the system yourself. In the event of problems, contact your local dealer.

9   Technical information

MagniLink Vision with an 18.5" TFT widescreen

Magnification	1.7 - 60x (HD) or 1.5 – 75x (FHD)
Resolution	1366 x 768
Power consumption	Max 57 W
Dimensions in use	460 x 470 x 480 mm (B x D x H)
Weight	11.8 Kg

MagniLink Vision with a 23" TFT widescreen

Magnification	2.0 - 60x (HD) or 1.9 – 90x (FHD)
Resolution	1920 x 1080
Power consumption	Max 67 W
Dimensions in use	560 x 470 x 570 mm (B x D x H)
Weight	13.5 Kg

General properties

Refresh rate CCTV camera	60 Hz
Refresh rate OCR camera	7 Hz
Luminance	300 cd/m^2
Contrast	1000:1
Focusing distance	0-60 mm (with max. magnification)
Adjustable working height	110 mm – 195 mm
Light source	8 LED
Mains voltage	100-240 V, 50-60 Hz
Reading table dimensions	420 x 300 mm (W x D)
Acceptable temperature ranges	Transport and storage: -20°C – +60°C Use: +5°C – +25°C
Relative humidity	<80%

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.

10 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 trademark:	*MagniLink*
Type designation:	**MLV-HD-E, MLV-FHD-E**
Product class:	*Class 1.*
Manufacturer:	*LVI Low Vision International AB*
Address:	*Verkstadsgatan 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 complies with 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, taking 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

2016-06-14

Signature

Position

Managing Director

Clarification

Erik Bondemark

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